### **Draft Report**

### April 2001 Sampling Investigation Concrete Expansion Joint Material North Boeing Field Seattle, Washington

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Prepared for

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#### 1.0 INTRODUCTION

This report documents the most recent results of an ongoing investigation of concrete expansion joint material at North Boeing Field (NBF), in Seattle, Washington (Figure 1). Thirty-nine samples of five types of concrete expansion joint material were collected and analyzed for polychlorinated biphenyls (PCBs) in April 2001. The purpose of this sampling was to better evaluate the variability of PCB concentrations in three types of concrete joint material present at NBF. Previous investigations had indicated that these three types of joint material contained PCBs at concentrations ranging from nondetect to 50,000 mg/kg. In addition to better characterizing these three types of material, two additional types of concrete joint material that had not been previously evaluated were sampled and analyzed for PCBs.

A brief summary of concrete joint material investigations that preceded the April 2001 investigation is provided in the following sections, as well as a summary of the April 2001 investigation. This report concludes with a summary of the description, characterization, location, and PCB concentrations of each type of joint material at NBF, based on the combined results from the investigations.

#### 2.0 PREVIOUS INVESTIGATIONS

Previous investigations of the concrete expansion joint material for PCBs at NBF consisted of a visual inspection of the joint materials, sampling and analysis of the materials identified in the visual inspection, and mapping the location of selected types of joint material. This section provides a brief description of these investigations.

#### 2.1 VISUAL INSPECTION

In October 2000, Boeing and D&G Mechanical personnel conducted a visual inspection of the concrete expansion joints at NBF. The purpose of the inspection was to identify the types of joint material present in the concrete joints. Ten joint material types were identified. The joint material types were distinguished based on observed physical properties. The joint material types were given alphabetical designations, A through J.

#### 2.2 INITIAL JOINT MATERIAL SAMPLING (NOVEMBER 2000)

During November 2000, Boeing and D&G Mechanical collected samples of each of the ten types of joint material identified during the visual inspection. A total of 48 joint material samples were collected and analyzed for PCBs using U.S. Environmental Protection Agency (EPA) method 8082. The samples were analyzed by Analytical Resources, Inc. (ARI) located in Seattle, Washington. Of the 48 samples collected, one sample of Type A joint material contained 23,000 mg/kg total PCBs. Two samples of Type G joint material contained 35,300 and 50,000 mg/kg total PCBs, respectively. One sample of Type H joint material contained 164 mg/kg total PCBs. All of the other joint material samples had total PCB concentrations below 50 mg/kg. Sample collection procedures and analytical results for all ten joint material types identified at NBF are provided in the Sampling and Analysis Report, Concrete Joint Material, North Boeing Field, Seattle, Washington (Landau Associates 2001a). A summary of the results is also included in the data tables in this report.

#### 2.3 FIELD MAPPING

Based on the analytical results from the November joint material sampling, Boeing and Landau Associates' personnel conducted a more focused investigation of the joint material at NBF during February 2001. This investigation included the following tasks:

 Characterization and field mapping of joint material Types A, E, G, and H, by determining and documenting their location, linear extent, condition and, if appropriate, defining joint

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material subtypes. This investigation not only identified joints that contained these types of material as the primary material, but also identified joints where remnants of these types of joint material were present (i.e., the joint material had been replaced, but still remained along the edges of a joint filled with new material). These remnants are referred to as "residual" joint material.

- Examination of the area near each previous joint material sample location with a total PCB concentration greater than 50 mg/kg for evidence of possible spills, such as staining. The area examined included a 100-ft radius around each catch basin unless a boundary, such as an obvious slope or grade change, suggested a smaller area was appropriate. No evidence of spills was observed.
- Identification of the joint material types located within a 100-ft radius of each catch basin or manhole that historically contained solid material with total PCB concentrations of 10 mg/kg or greater.
- Identification of additional types of joint material not previously identified, joint material Type K and Subtype C2.

The results of this investigation are documented in the Concrete Expansion Joint Material Field Mapping Report, North Boeing Field, Seattle, Washington (Landau Associates 2001b).



#### 3.0 ADDITIONAL JOINT MATERIAL INVESTIGATION

This section describes the activities that were performed for the additional joint material sampling event that occurred in April 2001. This sampling event followed the field mapping of Types A, E, G, and H joint material.

#### 3.1 JOINT MATERIAL SAMPLE COLLECTION

A total of 39 joint material samples (including blind field duplicates) were collected during this investigation. Consistent with the November 2000 joint material sampling event, each sample was given a unique sample identification number (e.g., NBF-SP58-010402-G). "NBF" represents North Boeing Field. "SP-58" indicates the 58<sup>th</sup> sample collected during both sampling events. "010402" is a date reference: yy/mm/dd. "G" indicates primary joint material type. During this investigation, residual joint material was indicated by "Res." prefacing the material type (i.e., "Res. G"). Samples were collected in accordance with the procedures described in the Sampling and Analysis Plan, Concrete Joint Material, North Boeing Field, Seattle, Washington (SAP) (Landau Associates 2000).

Following the sample collection, each sample location was marked with spray paint and labeled with the sample identification number. A Global Positioning System (GPS) unit was used to determine the x, y (northing and easting) coordinates for each of the sample locations.

#### 3.2 LABORATORY ANALYSES AND DATA QUALITY EVALUATION

The April 2001 concrete joint material samples were analyzed for PCBs using EPA method 8082. To eliminate potential chromatographic interferences, sulfuric acid and elemental mercury cleanup procedures were performed on the sample extracts prior to analysis. All of the cleanup procedures and analyses were performed by ARI.

Following receipt of the analytical results, the quality of the data was evaluated by Landau Associates in accordance with the procedures and requirements specified in Section 3.0 of the SAP (Landau Associates 2000). According to the evaluation, the detected aroclor concentrations for sample NBF-SP78-010404-G and the blind field duplicate sample NBF-SP79-010404-G were qualified as estimates (J) due to the relative percent difference between these concentrations. Otherwise, no data were rejected and the data were determined acceptable for use as qualified. Laboratory data sheets are provided in Appendix A.



## 4.0 SUMMARY OF JOINT MATERIAL TYPES AND ANALYTICAL RESULTS

This section summarizes the physical characteristics, the location, and the range of PCB concentrations for each type of concrete expansion joint material identified at NBF. This summary is based on analytical results obtained from all the concrete expansion joint investigations conducted to date at NBF. A detailed description of each type of joint material, including the number of samples collected and the range of total PCB concentrations detected in each type of joint material, is provided in Table 1. A tabulated summary of individual aroclor concentrations and total PCB concentrations is presented in Tables 2 and 3, respectively. Sample identifications used on this table are a portion of the sample identification number and include the sample Type designation (e.g., "A") and sample sequence (e.g., "SP14"). Total PCB concentrations for each type of concrete joint material are mapped by sampling location on Figures 2 through 8.

#### 4.1 TYPE A

Type A joint material is described as a dull, black material with the consistency of a pencil eraser. It usually exhibits a puffed-up appearance. Type A was found as the primary joint filler at three areas at NBF: in the northern portion of NBF in front of buildings 3-369 and 3-380, in the southern portion of NBF near the northwest corner of building 3-840, and in the central portion of NBF near stall B-5. Only small amounts of this material were observed at each location. No residual Type A material was found.

A total of eight Type A joint material samples were collected during the November 2000 and April 2001 sampling events. A ninth sample, NBF-SP38-001109-A, was originally identified as Type A; however, after further observation and characterization during the February 2001 field mapping, it was reclassified as Type F material and the sample identification number was revised to NBF-SP38-001109-F.

The total PCB concentrations detected in the eight Type A samples ranged from nondetect to 79,000 mg/kg. Three of the eight samples had total PCB concentrations of 23,000 mg/kg or greater. All three of these samples were located north of the 3-369 paint hangar, near the northwest corner of the 3-390 building. Total PCB concentrations in the remaining five Type A samples were less than 50 mg/kg. Due to the broad range of total PCB concentrations detected in the Type A material, some basic statistical parameters were calculated for the Type A data set. These parameters include the mean of the detected concentrations, the standard deviation of the detected concentrations, and the upper 95 percent confidence limit (UCL) on the mean. The statistical parameters are presented in Table 4. Sample locations and corresponding total PCB concentrations are shown on Figure 2.



#### 4.2 TYPES B, B1, AND B2

Type B is a dark brown to black material with the consistency of a soft earplug. It is found as the primary material filling joints associated with new concrete and comprises the majority of the concrete joints at NBF. Type B was subdivided into Types B, B1, and B2 based on installation date of the joint material (see Table 1). A total of five Type B samples, four Type B1 samples, and three Type B2 samples were collected in November 2000. These joint material types were not sampled in April 2001. The sample locations for Types B, B1, and B2 are shown on Figure 3.

All samples of this type of joint material, regardless of the date of installation, contained total PCB concentrations of less than 50 mg/kg. Total PCB concentrations ranged from nondetect to 4.3 mg/kg with the exception of one Type B sample, which contained a total PCB concentration of 41.9 mg/kg. Sample locations and corresponding total PCB concentrations are shown on Figure 3. Further discussion of the characterization of each subtype is provided in the *Concrete Joint Material Sampling and Analysis Report* (Landau Associates 2001a).

#### 4.3 TYPES C, C1, AND C2

Type C is a medium gray material typically associated with newer patches of concrete. Two Subtypes (C1 and C2) were identified based on slight color variations. Type C1 is dark gray and Type C2 is a gray-white; however, both types have other physical characteristics that are similar to Type C. Type C is found along the northern property boundary, near the wash stall, in the northeast corner of NBF, and north of Concourse C. Type C1 is found at stall B-13 and Type C2 is found along the utilidor north and west of the 3-390 building.

A total of three Type C and one Type C1 samples were collected in November 2000. A total of three Type C2 samples were collected in April 2001. Each sample location is shown on Figure 4.

The total PCB concentrations for all three types of this joint material ranged from nondetect to 13 mg/kg. Sample locations and corresponding total PCB concentrations are shown on Figure 4. Further discussion of the characterization of each subtype is provided in the *Concrete Joint Material Sampling and Analysis Report* (Landau Associates 2001a).

#### 4.4 TYPES D AND D1

Type D joint material is a dark brown material with the consistency of a fan belt. It is found, in small amounts, as the primary joint material at various locations throughout NBF. A subtype of this material (D1) was identified due to some slight physical variations (Table 1). Type D is found north of



the 3-369 paint hangar and in the parking lot north of stall C-4. Type D1 is found as material filling concrete cracks, near stall A-5. Four samples of Type D and one sample of Type D1 were collected in November 2001.

The PCB concentrations for these two types of joint material ranged from 0.77 to 2.7 mg/kg. The sample locations and corresponding total PCB concentrations are shown on Figure 4.

#### 4.5 TYPE E

Type E is a light gray material with the consistency of bathtub caulk. It is found along the northern property boundary of NBF, the north side of the 3-333 building, and along the wash stall in the southern portion of NBF. Three samples of Type E material (including one blind field duplicate) were collected during the November 2000 sampling event.

The total PCB concentrations for Type E material ranged from 0.53 to 5.2 ppm. Sample locations and corresponding total PCB concentrations are shown on Figure 5.

#### 4.6 TYPE F

Type F is a black, tar-like joint material with a cracked, glassy surface. It is slightly pliable and elastic. Type F material is found as a primary material filling concrete expansion joints located along the northwestern property boundary of NBF, along the utilidor east of Concourse B, and under the blast wall along Concourse B.

Seven Type F samples were collected during the November 2000 sampling event. One of these samples was originally identified as Type A, as discussed in Section 4.1. The total PCB concentrations for the Type F material ranged from nondetect to 3.1 mg/kg. Sample locations and corresponding total PCB concentrations are shown on Figure 5.

#### 4.7 **TYPE** G

Type G is a pink-tan material with the consistency of dense caulking. It is found as the primary material filling concrete expansion joints and as residual material found along the edges of concrete expansion joints filled with another type of material (generally Type B). Type G is found as the primary joint material mostly along the A concourse. Type G can also be found as residual material along the A concourse and along the B concourse; however, neither primary nor residual Type G is found at any location south of stall B-9 at NBF.

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A total of sixteen Type G joint material samples were collected during the November 2000 and April 2001 sampling events. Nine of the samples (including one blind field duplicate) were collected from areas where Type G was found as the primary material filling the concrete expansion joint and seven of the samples were collected from areas where Type G was found as a residual material. The total PCB concentrations for the nine primary Type G samples ranged from 6.1 to 61,000 mg/kg. All but two samples had PCB concentrations 3,900 mg/kg or greater. The total PCB concentrations for the other two samples were significantly less (i.e., 6.1 and 14.1 mg/kg). Both of these samples were located near the taxiway between the A and B concourses. The total PCB concentrations for the residual Type G material samples ranged from 4,200-57,000 mg/kg. Due to the broad range of total PCB concentrations detected in the Type G material, some basic statistical parameters were calculated for the Type G data set, including data for both primary and residual Type G samples. These parameters included the mean of the detected concentrations, the standard deviation of the detected concentrations, and the UCL. The statistical parameters are presented in Table 4. The sample locations for both the primary and residual Type G material and corresponding total PCB concentrations are shown on Figure 6.

#### 4.8 TYPE H

Type H is a black, tar-like, brittle joint material. It is found as primary joint filling material and as residual joint material throughout NBF. Based on the observations made during the visual inspection and the field mapping investigation, it appears that Type H material may be a continuum of Type F joint material due to similar physical characteristics (e.g. both materials are black and tar-like in appearance). The main difference between the two types is that Type F is slightly pliable and Type H is brittle. It is our conclusion that Type F may represent a less weathered condition and Type H a more heavily weathered condition of the same basic joint material type. This conclusion is based solely on the field observations of physical characteristics of the joint materials.

A total of twenty-two Type H joint material samples were collected during the November 2000 and April 2001 sampling events. Fourteen of these samples (including one blind field duplicate) were collected from areas where Type H is found as the primary material filling the concrete expansion joints and eight of the samples were collected from areas where Type H is found as a residual material. The total PCB concentrations for the fourteen primary Type H samples ranged from nondetect to 270 mg/kg. Only two of the samples contained total PCB concentrations greater than 50 mg/kg. These samples were located in the northeastern corner of NBF, just north of the 3-322 building (Figure 7). Total PCB concentrations for the other twelve primary Type H samples were 25.1 mg/kg or less. The total PCB concentrations for the eight residual Type H samples ranged from 1.8 to 42 mg/kg, with the exception of



one sample located south of stall A-6, which contained a total PCB concentration of 2,240 mg/kg and one sample at stall B-2, which contained a total PCB concentration of 50 mg/kg. Due to the broad range of total PCB concentrations detected in the Type H material, some basic statistical parameters were calculated for the Type H data set, including data for both primary and residual Type H samples. These parameters include the mean of the detected concentrations, the standard deviation of the detected concentrations, and the UCL. The statistical parameters are presented in Table 4. The sample locations for both the primary and residual Type H joint material samples and the corresponding total PCB concentrations are shown on Figure 7.

#### 4.9 TYPE I

Type I is a dull, brown-gray material with the density of a bungee cord. It was found in only two locations at NBF: east of stall A-6 and north of stall A-5. It is the primary joint material filling the concrete expansion joints at these two locations. No residual Type I was found. Two samples were collected during the November 2000 sampling event. Total PCBs were detected in one of the samples at a concentration of 1.2 mg/kg. No PCBs were detected in the second sample. The sample locations and corresponding total PCB concentrations are shown on Figure 8.

#### 4.10 TYPE J

Type J is a two-layer joint material with a dark-gray upper layer and a dull tan underlying layer. It was found as the primary material filling concrete expansion joints only around the oil-water separator in stall A-6. No residual Type J material was found. Two samples of Type J material were collected during the November 2000 sampling event. Total PCBs were detected in one sample at a concentration of 1.1 mg/kg and no PCBs were detected in the second sample. The sample locations and corresponding total PCB concentration for Type J material are shown on Figure 8.

#### 4.11 TYPE K

Type K is a dark-brown, fibrous, wood-like joint material. This material was not identified until the field mapping portion of the joint material investigation. Type K was identified as the primary material filling concrete expansion joints along the 3-333 building, near the 3-386 wind tunnel building, and in the sidewalk concrete expansion joints around the 3-800 and 3-801 buildings. Type K was not found as a residual material. Three samples of Type K were collected during the April 2001 sampling



event. The total PCB concentrations for the Type K samples ranged form nondetect to 0.78 mg/kg. The sample locations and corresponding total PCB concentrations are shown on Figure 8.

#### 5.0 CONCLUSIONS

The joint material investigations conducted to date have identified 11 different types of joint material present in the concrete joints at NBF (Types A through K). A total of 87 samples of these 11 types of joint material were collected and analyzed for PCBs. The results from these samples indicate that three types of joint material (A, G, and H) contain total PCB concentrations greater than 50 mg/kg. One sample each of Types B and C2 joint material contained total PCB concentrations between 10 and 50 mg/kg. Figures 9a through 9f show the locations of joint material types; locations and total PCB concentrations of Types A, B, C2, G, and H material samples; and locations of catch basins with total PCB concentrations greater than 10 mg/kg.

The extent of Type A joint material at NBF is estimated to be about 3,500 linear feet (Landau Associates 2001b). Eight samples of Type A material were collected and analyzed. Approximately 37 percent of the Type A joint material samples had total PCB concentrations ranging from 23,000 to 79,000 mg/kg. These samples were all from an area in front the 3-369 building. The extent of joint material in this area is estimated to be about 1,060 linear ft. The remaining 63 percent of the Type A samples had total PCB concentrations of less than 50 mg/kg.

Types G and H can be found as the primary material filling a concrete joint and as residual material located along the edges of concrete joints filled with another type of material, most often Type B. Type G material is only found in the northern portion of NBF (i.e., north of stall B-9). The extent of concrete expansion joints filled with Type G material is estimated to be approximately 464 linear ft (Landau Associates 2001b). Residual Type G material is estimated to be present along 56,000 linear ft (10.7 miles) of joints; however, the volume or mass of residual material present is difficult to estimate. Sixteen samples of Type G material were collected and analyzed. Approximately 87 percent of the Type G samples had concentrations ranging from 3,900 to 61,000 mg/kg. The remaining 13 percent (two samples, both from the taxiway between Concourse A and B) of the Type G samples had concentrations below 15 mg/kg. Seven of the sixteen Type G material samples were of residual joint material. All of the residual Type G material samples contained total PCB concentrations of 4,200 mg/kg or greater.

Type H material is found throughout NBF. The extent of concrete expansion joints filled with Type H material is estimated to be approximately 64,000 linear ft (12.1 miles) (Landau Associates 2001b). Residual Type H material is estimated to be present along 191,000 linear ft (36.2 miles) of joints; however, the volume or mass of residual material present is difficult to estimate. Twenty-two samples of primary and residual Type H material were collected and analyzed. Approximately 14 percent (two samples) of the primary Type H material samples had concentrations above 50 mg/kg, ranging from 164 to 2,240 mg/kg. The two samples were both from an area just north of the 3-322 building, near a large



machine. Few other samples of Type H joint material were collected from the area north of the Concourse A blast wall; therefore, it is difficult to evaluate whether the two analyzed samples are representative of all of the Type H material north of the Concourse A blast wall (5,600 linear ft) or only of the area north of the 3-322 building (180 linear ft). The remaining 86 percent of the samples had total PCB concentrations less than 50 mg/kg. Eight of the twenty-two Type H material samples were of residual joint material. Two of the Type H residual material samples had a total PCB concentration equal to or greater than 50 mg/kg. One, from near stall A-6, was from an area with both residual Type G and residual Type H materials. The measured concentration may have been influenced by nearby residual Type G material. Of the areas identified as having residual Type H material, 71,000 linear ft (37 percent) is along joints where residual Type G material is also present. The second sample of residual Type H material with a concentration equal to or greater than 50 mg/kg was collected from stall B-4.



#### 6.0 USE OF THIS REPORT

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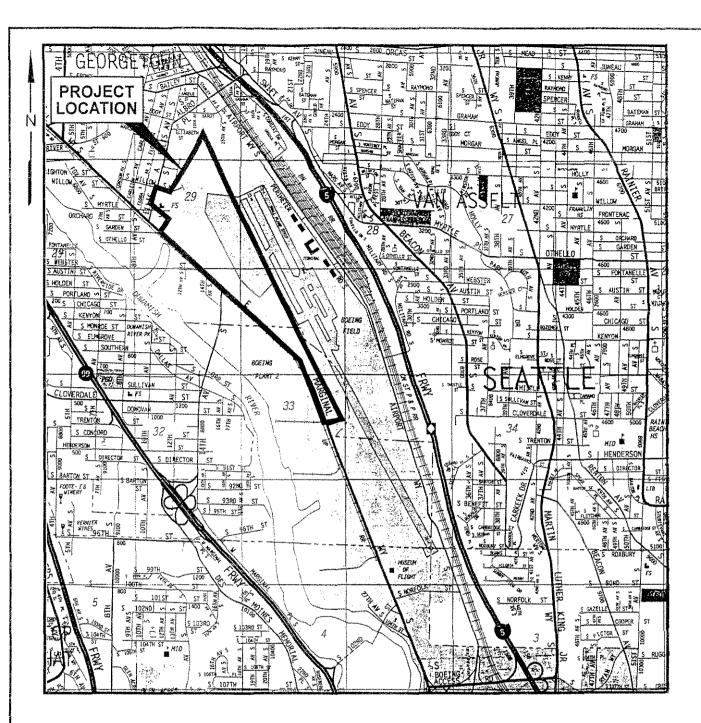
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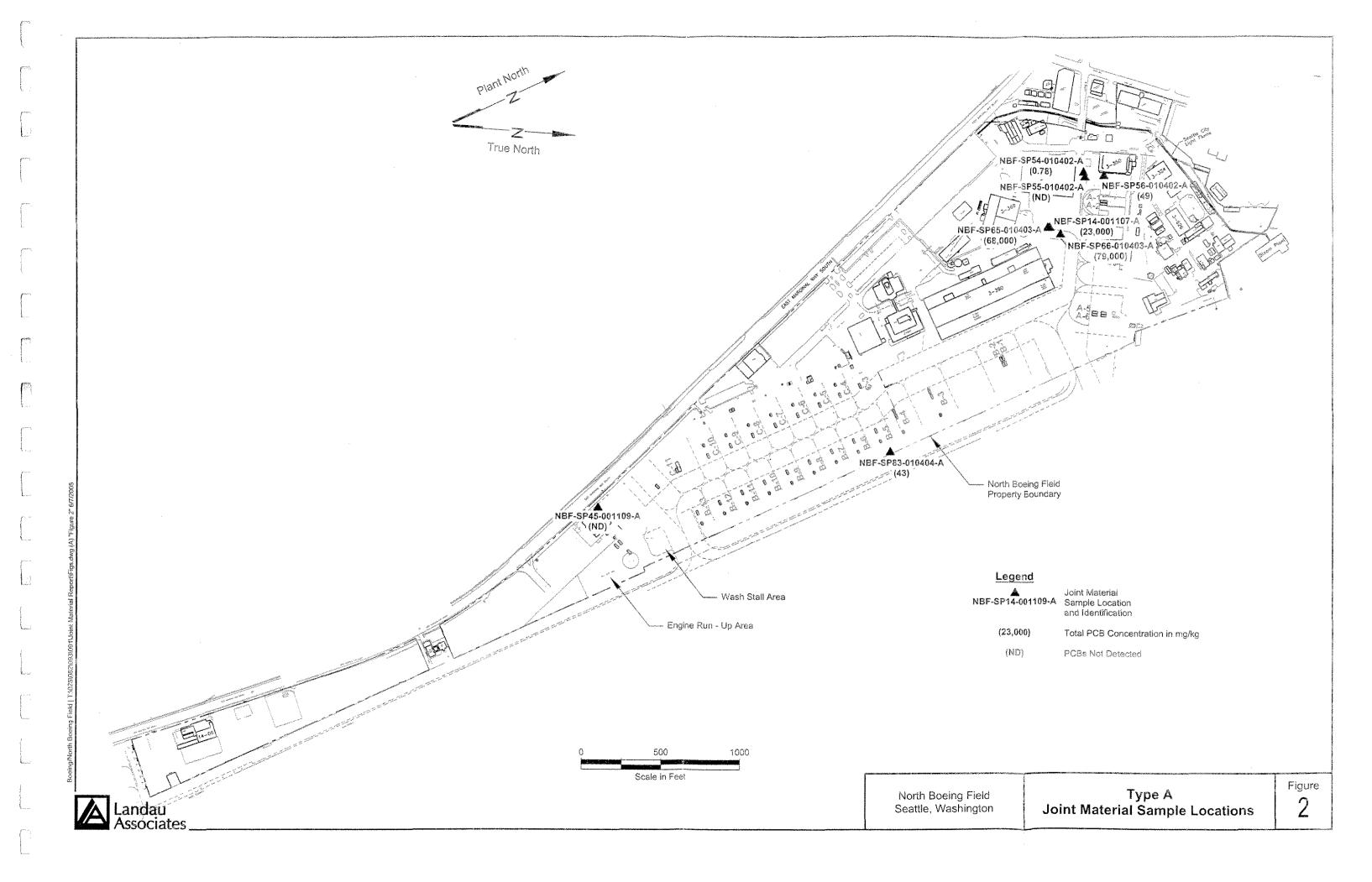
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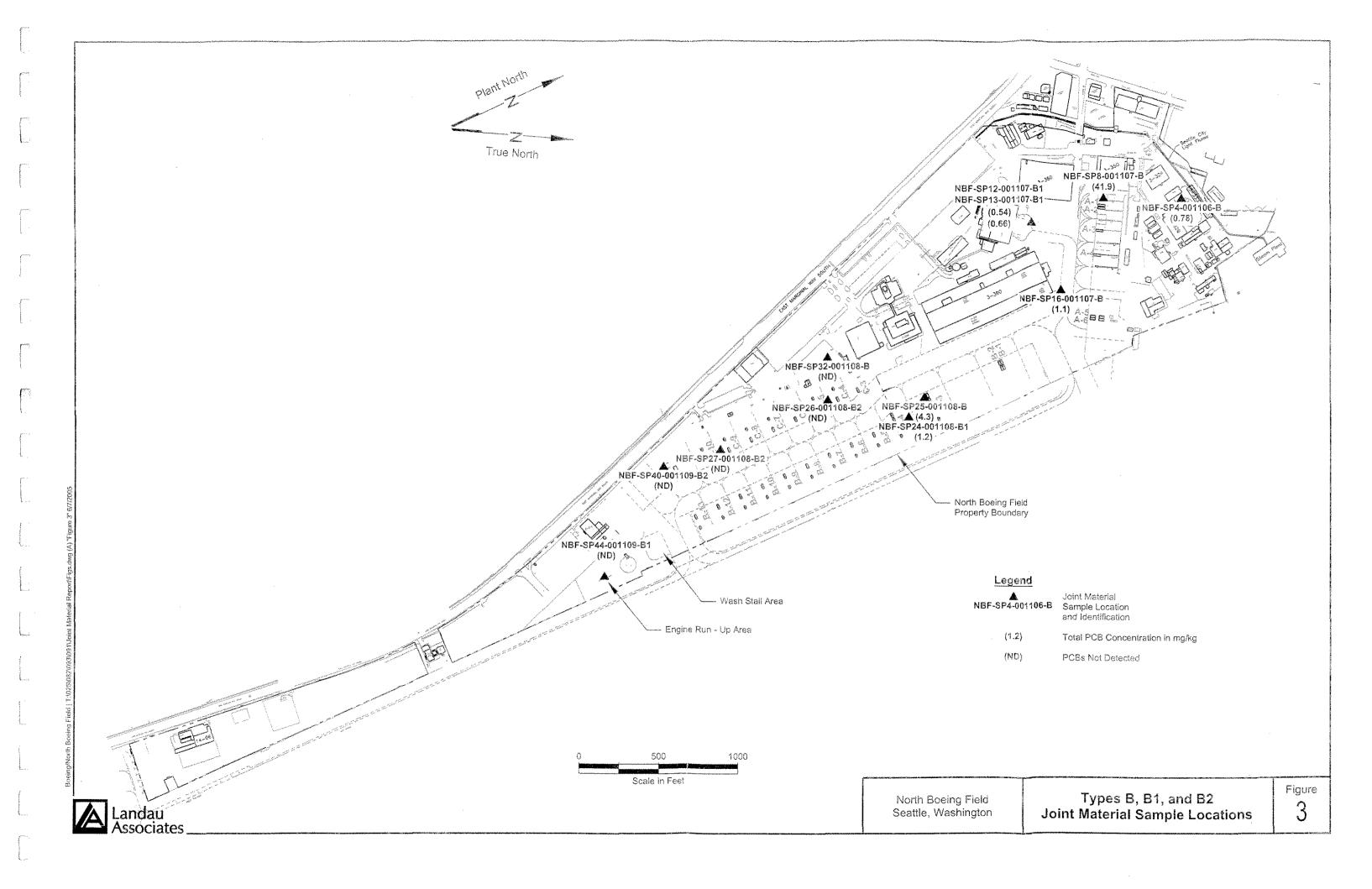


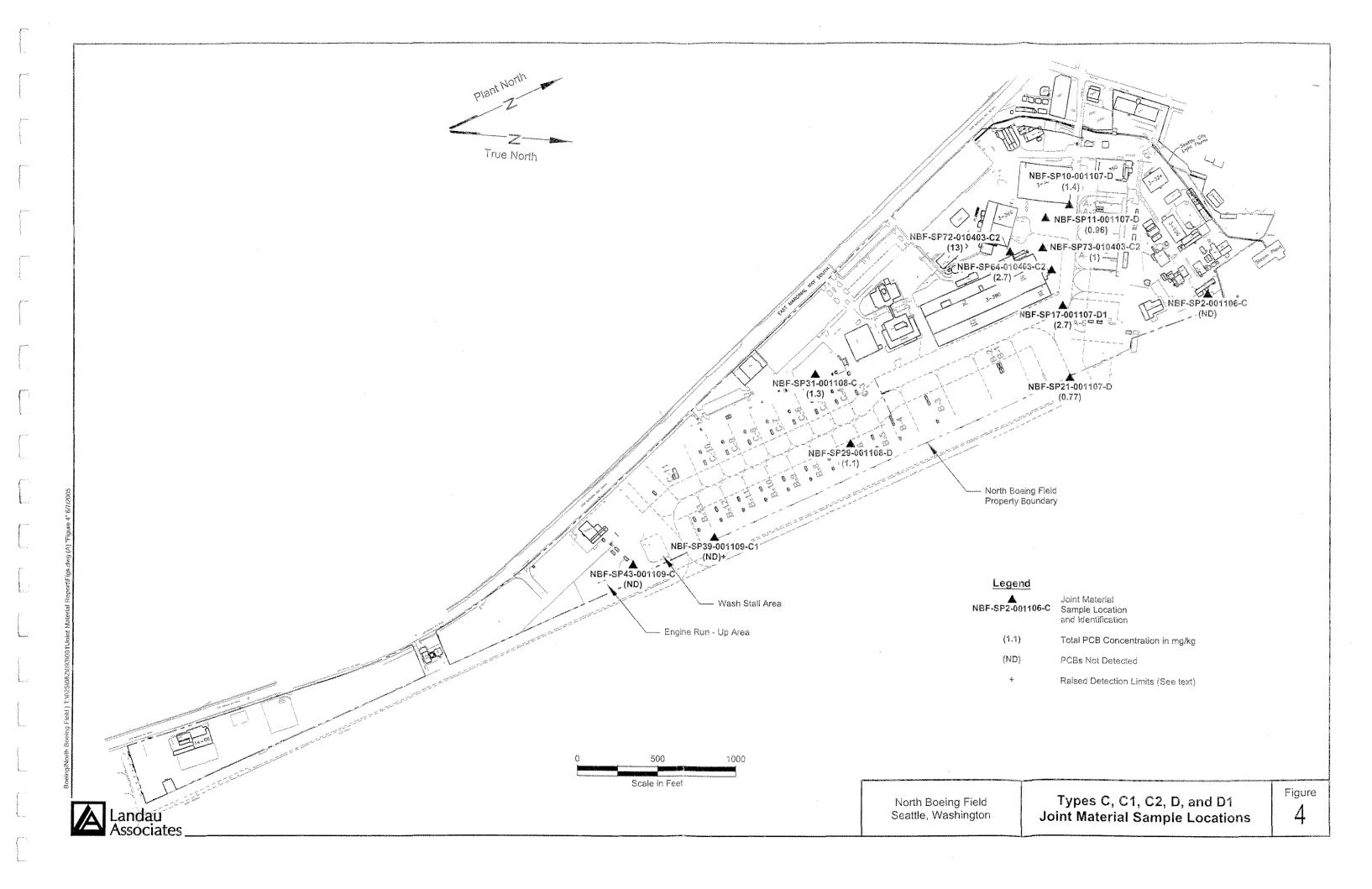
North Boeing Field Seattle, Washington

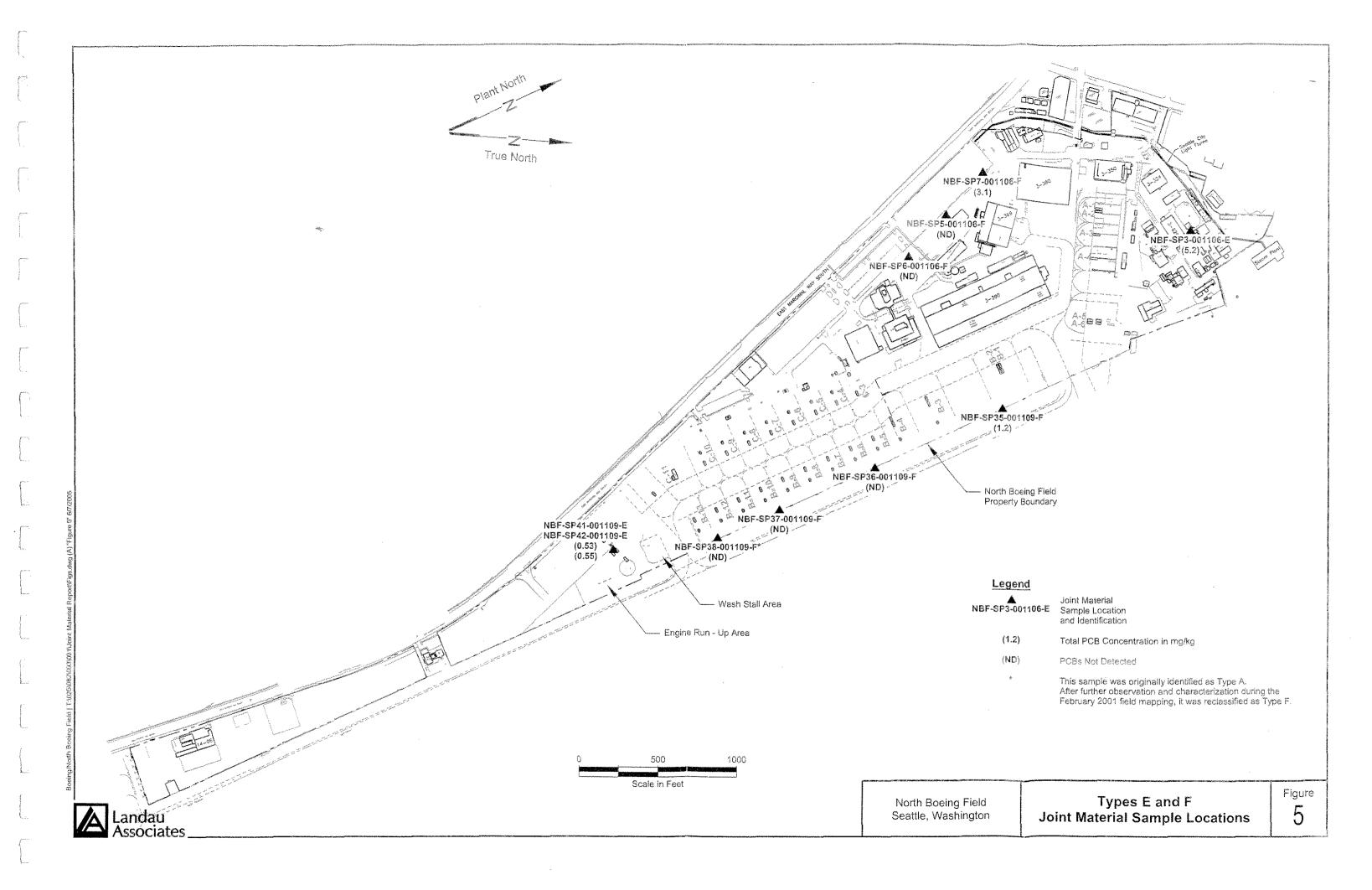
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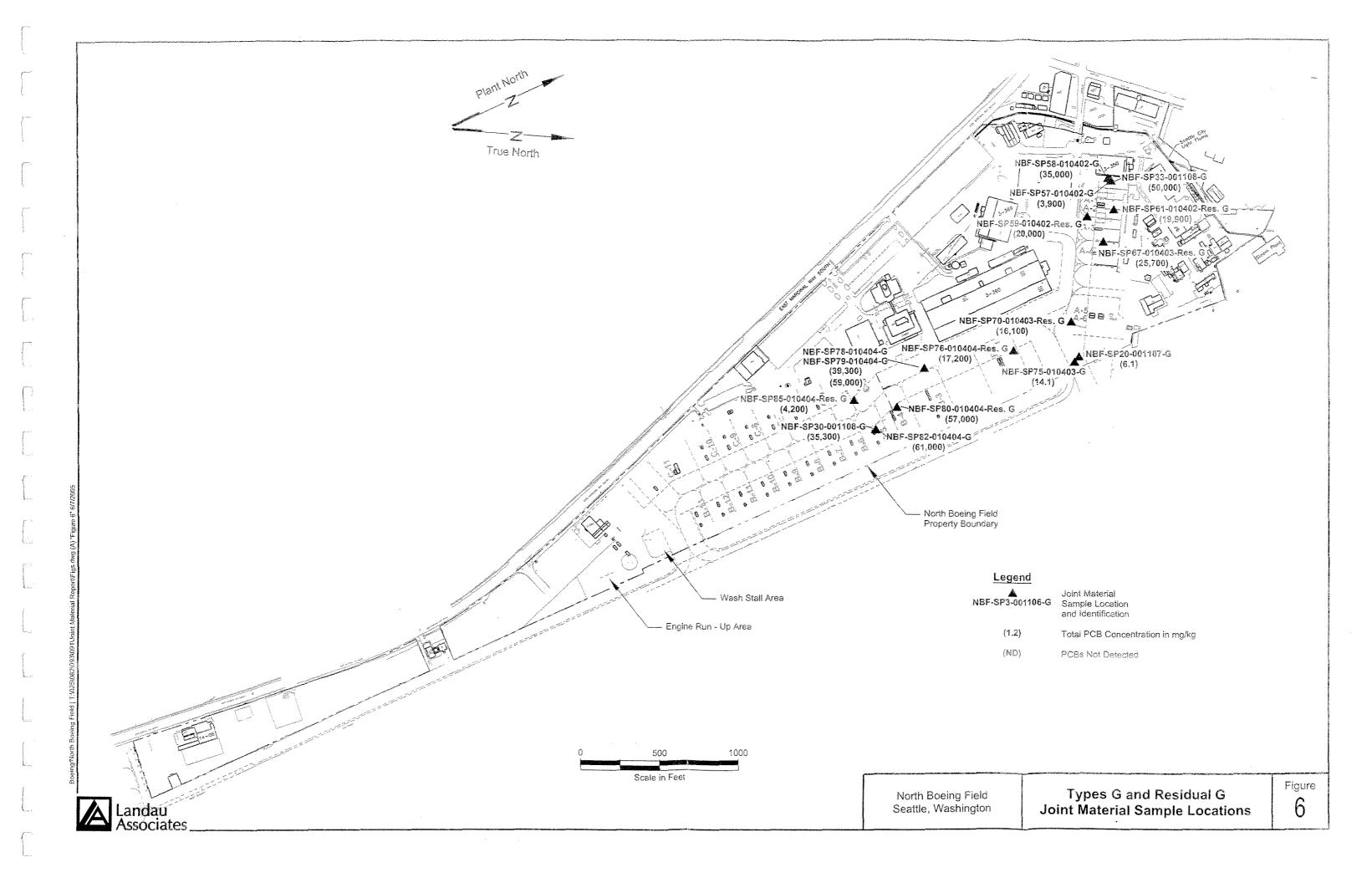
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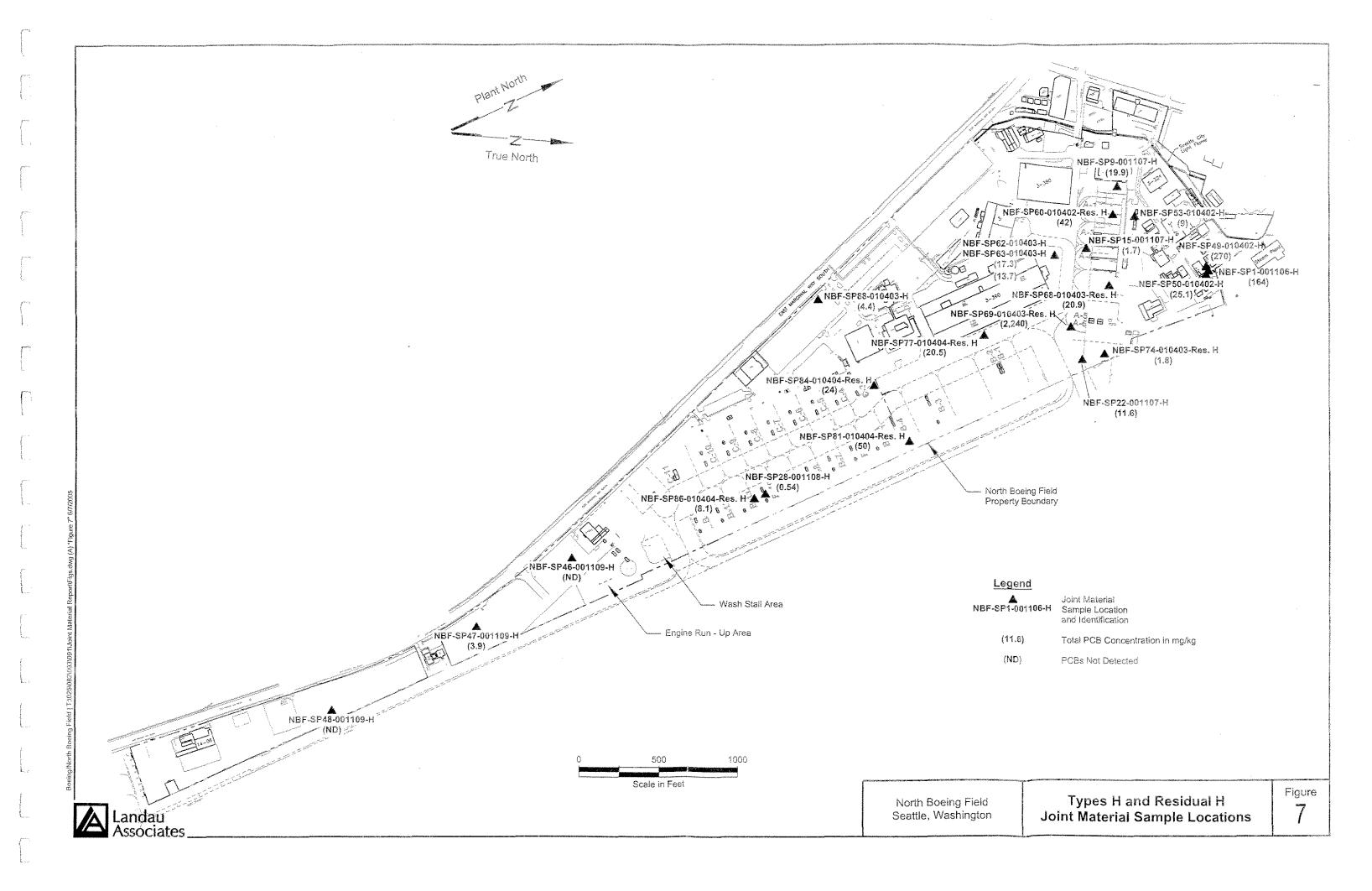


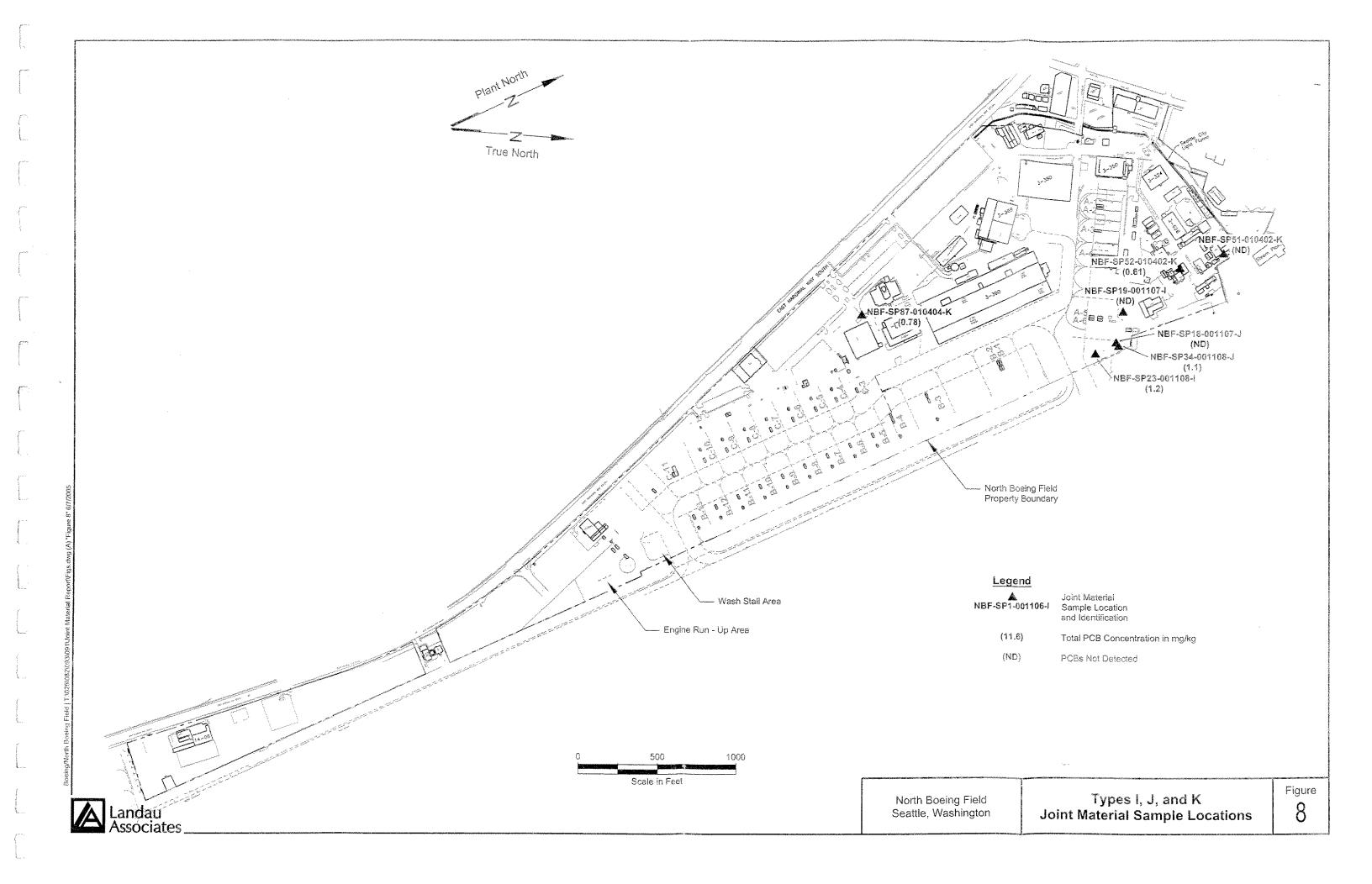












## TABLE 1 JOINT MATERIAL TYPE DESCRIPTIONS

Туре	Date Installed	Number of Samples Collected	Range of Total PCB Concentrations (ppm)	Description
A	Unknown ·	2 (Nov.) 6 (Apr.)	ND - 79,000	Black material with the consistency of a pencil eraser. Typically, the surface weathers with small cracks and wrinkles to a dull appearance. A freshly cut surface was slightly tacky with a shiny black appearance. The edges of the material do not bond tightly to the concrete giving a puffed-up appearance. This material was not generally associated with a backer rod.
В	Unknown	5 (Nov.)`	ND - 41.9	A dark brown to black material with the consistency of a soft earplug. Typically, the surface weathers slightly to dull brown and has minimal cracking. A freshly cut surface was shiny black with a sticky texture. This material was usually in good condition with the edges tightly bonded to the concrete. Type B was usually associated with joints that have been replaced by cutting out the old material. Typically, this material was placed over a gray or green-yellow rounded foam backer rod. The backer rod was stained a bronze color where it contacted with the Type B material.
B1	2000	4 (Nov.)	ND - 1.2	This material is as described above with the following exception. The weathered surface was a glossy black to dark brown. New material tended to be glossier. The minimal surface cracking had little to no depth.
B2	1997	3 (Nov.)	ND	This material is as described above, but no backer rod was associated with this joint compound in new concrete at Concourse C.
C	Unknown	3 (Nov.)	ND - 1,3	A medium gray material with a consistency slightly harder than a foam earplug ranging to hardened caulking material. Typically, the surface is a dull medium gray color with minimal shallow surface cracking. A freshly cut surface is also flat. This material is usually in good condition and has been observed around the edges of newer concrete such as concrete sections that have been replaced in otherwise older areas. This material was not generally associated with a backer rod. This material has air bubbles or voids < 1-2mm in size.
C1	Unknown	1 (Nov.)	ND	A medium gray material with the consistency of bathtub caulk. Typically, the weathered surface is dull. A freshly cut surface is dull medium gray, although darker than the weathered surface. This material was found as residual material along the concrete edges. This material has pin-prick sized air bubbles.
C2	Unknown	3 (Apr.)	1 - 13	A gray-white material with a consistency of a fan belt. Typically, the upper surface weathers to a dull, dark brown or black, with minimal surface cracking. A freshly cut surface is a dull gray-white. This material is usually found in good condition.
D	Unknown	4 (Nov.)	0,77 - 1.4	A dark brown material with the consistency of a fan belt. Typically, the weathered surface is dull with minimal surface cracking. A freshly cut surface is shiny black. This material is usually in good condition, but the edges do not seem to be tightly bonded to the concrete. This material was not generally associated with a backer rod.
D1	Unknown	1 (Nov.)	2.7	This material is the same as described above with the following exceptions: a freshly cut surface is a dull black, and the edges of the material are tightly bonded to the concrete. This material is usually associated with crack repairs.



## TABLE 1 JOINT MATERIAL TYPE DESCRIPTIONS

Туре	Date Installed	Number of Samples Collected	Range of Total PCB Concentrations (ppm)	Description
E	Unknown	3 (Nov.)	0.53 - 5.2	A light gray material with the consistency of bathtub caulk. Typically, the surface weathers to a dull white-gray. A freshly cut surface is dull light gray with trace amounts of tiny air bubbles. This material is in poor condition and is associated with joints that have been replaced around grates and utilities. Typically, this material leaves a residual white powder when rubbed. This material was not generally associated with a backer rod.
<u>**</u>	Unknown	7 (Nov.)	ND - 3.1	A black tar-like material with the consistency of a pliable elastic foam earplug. Typically, the surface weathers to a dull black with a cracked and wrinkled surface, or a cracked glassy surface. A freshly cut surface is shiny, black, and slightly tacky. This material was usually in good condition. This material was not generally associated with a backer rod.
G - Primary G - Residual	Unknown	3 (Nov.) 6 (Apr.) 7 (Apr.)	6.1 - 61,000 4,200 - 57,000	A pink-tan material with the consistency of dense caulking. Typically, the surface weathers to a dull pink-tan, with irregular cracks. A freshly cut surface is a dull light tan. This material does not bond tightly to the concrete edges. Occasionally, this material has a gray-white weathered surface that can be rubbed away to show the pink-tan weathered coloring. This material was not generally associated with a backer rod.
H - Primary H - Residual	Unknown	8 (Nov.) 6 (Apr.) 8 (Apr.)	ND - 270 1.8 - 2,240	A black tar-like material with a rock-like consistency. Typically, the surface weathers to a dull black with deep cracking and wrinkling. This brittle material does not cut, but instead fractures. A freshly fractured surface is a glassy black with irregular edges. This material is usually in poor condition, with edges not tightly bonded to the concrete. This material was not generally associated with a backer rod.
and the state of t	Unknown	2 (Nov.)	ND - 1.2	A dull brown-gray material with the consistency and density of a rubber bungee cord. Typically, the surface weathers with slight wrinkles. A freshly cut surface is a dull brown-gray. This material is usually in good condition. The material is well bonded to the edges of the concrete. This material was not generally associated with a backer rod. The material characteristics suggest it may be an intermediate type between Type B and Type D.
J	Unknown	2	ND - 1.1	A two-layer material with dark gray to black material approximately 1/8 <sup>th</sup> inch thick over a dull tan material with the consistency of a pencil eraser. Typically, the surface weathers to a dull slightly weathered dark gray. This material is associated with new concrete installed around the oil-water separator at Concourse A. This material was associated with a gray foam backer rod.
К	Unknown	3	ND - 0.78	A dark brown material with the consistency of a pencil eraser. Typically the weathered surface has a dull, irregular surface resembling tree-bark, with moss growing out of the upper surface. A freshly cut surface is dull, fibrous, and wood-like. Unlike other joint material types observed at NBF, Type K is not a grout-like substance. A knifepoint may be used to shred small pieces of the material.



TABLE 2

#### NORTH BOEING FIELD

Joint Compound

All Matrices

All Classes

All Dates

Analyte	Units	A-SP14 11/07/296		A-SP43 11/09/200	90	A-SP54 04/02/200	91	A-SP55 04/02/20	21	A-SP36 04/02/200	17	A-SP65 04/03/206	71	A-SP66 04/03/200	į	A-SP83 04/04/200		B-SP04 11/06/206	0
Aroclor 1016	mg/kg	980	u	5	u	1	U	0.98	u	1	u	2000	u	20 <b>0</b> 0	U	5	U	1	U
Aroclor 1221	mg/kg	2000	U	10	U	2	U	2	U	2	U	4000	U	4000	U	10	U	2	U
Aroolor 1232	mg/kg	980	U	5	U	1.	U	0.98	U	1	u	2000	υ	2000	U	5	U	1	Ü
Aroclor 1242	mg/kg	980	u	5	U	1	U	0.98	υĮ	1	u	2000	U	2000	U	5	U	7	U
Aroclor 1248	mg/kg	980	u	5	U	1	U	0.98	u	1	u	2000	U	2000	U	5	U	. 1	U
Aroclor 1254	mg/kg	23000	l	5	u	0.78	J	89.0	U	14		52000		62000		27		0.78	J
Aroclar 1260	mg/kg	980	U	8.5	U	1	U	0.98	U	35		16000		17000	į	16		1	U
PCB, total	mg/kg	23000		10	U	0.78	J	2	u	49		68000		79000		43		0.78	J.

## TABLE 2 NORTH BOEING FIELD Joint Compound

All Matrices
All Classes

All Dates

Analyte	<i>Units</i>	B-SP08 11/07/2000	ł	B-SP16 11/07/200	90	B-SP25 11/08/200	00	B-SP32 11/08/200	0	B1-SP12 11/07/200	90	B1-SP12D 11/07/200	e e	B1-SP24 11/08/200	10	B1-SP44 11/09/200	a	B2-SP26 11/08/206	0
Aroclor 1016	mg/kg	0.98	u [	0.99	u	1	u	1	u [	0,99	IJ	0.98	u	0.99	U	0.98	U	0.98	U
Aroclor 1221	mg/kg	2	U	2	U	2	U	2	U	2	U	2	U	2	บ	2	U	2	U
Aroclor 1232	mg/kg	0.98	u	0.99	U	1	U	1	U	0.99	U	0.98	U	0.99	IJ	0.98	U	0.98	U
Aroclor 1242	mg/kg	0.98	U	0.99	U	1	IJ	1	U	0,99	U	0.98	IJ	0.99	U	0.98	U	0.98	U
Aroclor 1248	mg/kg	0.98	u	0.99	u	1	U	1	U	0.99	U	0.98	U	0.99	U	0.98	U	0.98	U
Aroclor 1254	mg/kg	32		1.1		4.3		1	U	0.54	J	0.66	J	1.2		0.98	U	0.98	U
Aroclor 1260	mg/kg	9.9		0.99	U	1	U	1	u	0,99	U	89.0	U	0.99	U	0.98	U	0,98	U
PCB, total	mg/kg	41.9		1.1		4.3		2	U	0.54	J	0.66	J	1.2		2	U :	2	U

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TABLE 2

#### NORTH BOEING FIELD

Joint Compound

All Matrices

All Classes

All Dates

Analyte	Units	B2-SP27 11/08/206	90	B2-SP40 11/09/200	90	C-SP02 11/06/20	00	C-SP31 11/08/20	90	C-SP43 11/09/200	20	C1-SP39 11/09/200	0	C2-SP64 <b>0</b> 4/ <b>03</b> /200	T I	C2-SP72 04/03/200	i	C2-SP73 04/03/200	I
Aroclor 1016	mg/kg	89.0	υl	1	U	0.99	U	0.98	U	4	U	20	u	1	U	2	U	0.98	U
Aroclor 1221	mg/kg	2	U	2	U	2	U	2	u	2	U	40	u	2	U	9.9	U	2	U
Arador 1232	mg/kg	0.98	U	1	IJ	0.99	บ	0.98	U	1	IJ	20	IJ	1	U	2	U	0.98	U
Aroclor 1242	mg/kg	0.98	u	1	U	0.99	U	0.98	IJ	1	U	20	U	1	U	2	U	0.98	U
Aroclor 1248	mg/kg	89,0	U	4	U	0,99	บ	0.98	U	1	U	40	U	1	U	4.5	U	0.98	U
Aroclor 1254	mg/kg	0.98	U	1	U	1.1	U	1.3		1	U	270	U	1.4		13		1	
Arocior 1260	mg/kg	0.98	U	1	U	2.5	U	0.98	IJ	1	U	20	U	1.3		5.3	U	0.98	U
PCB, total	mg/kg	2	u [	2	U	2.5	บ	1.3		2	U	270	U	2.7		13		1	

# TABLE 2 NORTH BOEING FIELD Joint Compound All Matrices

All Classes
All Dates

F-SP05 D-SP10 D-SP11 D-SP21 D-SP29 D1-SP17 E-SP03 E-SP41 E-SP41DUP Analyte Units 11/07/2000 11/07/2000 11/07/2000 11/08/2000 11/07/2000 11/06/2000 11/09/2000 11/09/2000 11/06/2000 U U 0.98 U Aroclor 1016 0.99 U U U 0.99 0.98 U 0.98 U 0.98 U mg/kg 0.99 U U U U U U U U Aroclor 1221 mg/kg 2 2 U 2 2 2 2 2 2 Aroclor 1232 0.99 U 1 U 0.98 U U U U IJ mg/kg U 0.99 0.99 U 0.98 0.98 1 0.98 Aroclor 1242 U U U U U U U U U mg/kg 0.99 0.99 0.99 0.980.98 0,98 1 0.98U Aroclor 1248 0.99 U 4 u U U U U U U 0.98 0,99 0.98 0.98 0.98 4 mg/kg 0.99 Aroclor 1254 0.96 J U 4 U mg/kg 1.4 J 0.77 1.1 2.7 0.98 0.53į 0.55 0.98 Aroclor 1260 0.99 U U U U 0,98 U U U 0.98 U mg/kg 1 0.99 0.995.2 0.98 1 PCB, total U J 2 mg/kg 1.4 0.96 J 0.77 j, 1.1 2.7 5.2 0.53 0.55

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#### TABLE 2

#### NORTH BOEING FIELD

Joint Compound

All Matrices

All Classes

All Dates

Analyte	Units	F-SP06 11/06/2000		F-SP07	90	F-SP35 11/09/200	20	F-SP36 11/09/200	00	F-SP37 11/09/200	00	F-SP38 11/09/200	00	G-SP20 11/07/200	00	G-SP30 11/08/200	0	G-SP33 11/08/200	0
Aroclor 1016	mg/kg	0.98	u [	0.99	υ	0.98	u l		U	0.98	u	1	u l	0.98	u	990	υļ	980	υ
Aroclor 1221	mg/kg	2	U	2	u	2	U	2	u	2	U	2	u	2	U	2000	U	2000	U
Aroclor 1232	rng/kg	0.98	υĺ	0,99	u	0.98	u	4	U	0,98	U	1	u	0.98	U	990	U	980	U
Aroclor 1242	mg/kg	0.98	u	0.99	u	0.98	u	1	U	0.98	U	1	U	0.98	ប	990	U	980	U .
Aroclor 1248	mg/kg	0.98	υ	0.99	U	0.98	U	1	U	0.98	u	1.4	u	0.98	U	990	u	980	U
Aroclor 1254	mg/kg	0.98	υl	1.5		1.2		1	U	1.1	U	2.3	U	6.1		26000		31000	
Aroclor 1260	mg/kg	89.0	u	1.6	-	0.98	u	1	U	0.98	U	1	U	0.98	U	9300		19000	
PCB, total	mg/kg	2	u	3.1		1.2		2	U	2	u	2,3	U	6.1		35300		50000	

# TABLE 2 NORTH BOEING FIELD Joint Compound All Matrices

All Classes
All Dates

Analyte	Units	H-SP46 11/09/200	10	H-SP47 11/09/200	00	H-SP41 11/09/20	00	FL-SP45 04/02/200	91	H-SP50 04/02/200	91	H-SP53 04/02/206		H-SP60 R 04/02/200	<i>u</i>	H-SP62 04/93/200	I	H-SP62DU 04/03/200	1
Aroclor 1016	mg/kg	0.98	U [	0.98	u l	0.98	υl	9.8	υl	4	u	1	u l	1	U I	1	U	1	U
Aroclor 1221	mg/kg	2	U	2	U	2	u	20	u	2	u	2	u	2	u	2	U	2	U
Aroclor 1232	mg/kg	0.98	u	0.98	U	0.98	U	9.8	u	*\$	U	1	u	1	u	1	U	1	U
Aroclor 1242	mg/kg	0.98	U	0.98	U	0.98	U	9.8	u	1	U	1	U	. 1	υĺ	1	U	1	U
Aroclor 1248	mg/kg	82.0	u	0.98	U	0,98	u	67	U	7,1		1	U	1	u	1	U	1	u
Aroclor 1254	mg/kg	0.98	u	2.2		0.98	u	270	The second	18		5.4		23		10		8.6	
Aroclor 1260	mg/kg	0.98	U	1.7		0.98	u	83	U	1	U	3.6		19	graduation of the party of the	7.3		5.1	
PCB, total	mg/kg	2	u	3.9		2	u	270		25.1		9		42	ampayatingspaint	17.3		13.7	

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05/21/2001 Landau Associates

#### NORTH BOEING FIELD Joint Compound All Matrices

All Classes All Dates

Analyte	Units	H-SP68 R 94/03/200	Į.	H-SP69 F 04/03/20	01	H-SP74 I	91	H-SP77 F	01	H-SP81 R 04/04/200	91	H-SP84 R 04/04/206	77	H-SP86 R 04/04/200	·2	H-SP88 04/04/200	1	I-SP19 11/07/200	
Arocior 1016	mg/k <b>g</b>	1	U	100	U	1	U	0.99	U	5	U	1	U	1	u	1	u	0.99	U
Aroclor 1221	mg/kg	2	u	200	U	2	U	2	U	9,9	u	2	U	2	U	2	U	2	U
Aroclor 1232	mg/kg	200	U	100	U	1	U	0.99	U	5	U	1	U	1	U	1	U	0.99	U
Aroclor 1242	mg/kg	1	υĮ	100	u	1	u	0.99	U	5	U	1	U	1	υl	1	U	0.99	U
Aroclor 1248	mg/kg	1	U	100	u	1	U	0.99	U	9.5	u	2	U	2.2	u	1	U	0.99	U
Aroclor 1254	mg/kg	11	1	1400		1.8		12		36		13		4.8		2.4		0.99	U
Aroclor 1260	mg/kg	9.9	Į	840		1	U	8.5		14		11		3.3		2		0.99	U
PCB, total	mg/kg	20,9	Sept. Company	2240		1.8		20.5		50		24		8.1		4.4		2	l.f

#### TABLE 2 NORTH BOEING FIELD

Joint Compound

All Matrices

All Classes

All Dates

Analyte	Units	I-SP23 11/08/200	00	J-SP18 11/07/20	00	J-SP34 11/08/200	00	K-SP51 04/02/200		K-SP52 04/02/200	1	K-SP87 04/04/200	
Aroclor 1016	mg/kg	0.99	u]	0.99	υ	1	υl	401	u l	19	ul	1	U
Aroclor 1221	mg/kg	2	υl	2	U	2	υl	2	U	2	u	2	U
Aroclor 1232	mg/kg	0.99	u	0.99	u	1	υļ	1	U	1	υÌ	1	U
Aroclor 1242	mg/kg	0.99	U	0.99	u	1	u	1	u	1	u	1	U
Aroclor 1248	m <b>g</b> /kg	0.99	u (	0.99	U	1	u	1	U	1	U	1	U
Aroclor 1254	mg/kg	1.2		0.99	U	1.1		1	u	0.61	J	0.78	J
Aroclor 1260	mg/kg	0.99	u	0.99	U	1	U	1	U	1	u	1	U
PCB, total	mg/kg	1.2		2	υ	1.1		2	u	0.61	J	0.78	d.

TABLE 3
SUMMARY OF TOTAL PCB CONCENTRATIONS
NORTH BOEING FIELD

Joint Material Typa	Location	Sample Identification	Date	Sum of Detected Arocior Concentrations (mg/kg)
A	A-SP45	NBF-SP45-001109-A	11/9/2000	ND
Α	A-SP55	NBF-SP55-010402-A	4/2/2001	ND
A	A-SP54	NBF-SP54-010402-A	4/2/2001	0.78 J
A	A-SP83	NBF-SP83-010404-A	4/4/2001	43
Α	A-SP56	NBF-SP56-010402-A	4/2/2001	49
Α	A-SP14	NBF-SP14-001107-A	11/7/2000	23,000
A	A-SP65	NBF-SP65-010403-A	4/3/2001	68,000
A	A-SP66	NBF-SP66-010403-A	4/3/2001	79,000
В	B1-SP44	NBF-SP44-001109-B1	11/9/2000	ND
8	B2-SP26	NBF-SP26-001108-B2	11/8/2000	ND
В	B2-SP27	NBF-SP27-001108-B2	11/8/2000	ND
В	B2-SP40	NBF-SP40-001109-B2	11/9/2000	ND
8	B-SP32	NBF-SP32-001108-B	11/8/2000	ND
В	B1-SP12	NBF-SP12-001107-B1	11/7/2000	0.54 J
В	B1-SP12	NBF-SP13-B1 (Dup of SP12)	11/7/2000	0.66 J
В	B-SP04	NBF-SP4-001106-B	11/6/2000	0.78 J
8	B-SP16	NBF-SP16-001107-B	11/7/2000	1.1
В	B1-SP24	NBF-SP24-001108-B1	11/8/2000	1.2
В	B-SP25	NBF-SP25-001108-B	11/8/2000	4.3
В	B-SP08	NBF-SP8-001107-B	11/7/2000	41.9
C	C1-SP39	NBF-SP39-001109-C1	11/9/2000	ND
C	C-SP02	NBF-SP2-001106-C	11/6/2000	ND
C	C-SP43	NBF-SP43-001109-C	11/9/2000	ND
C	C2-SP73	NBF-SP73-010403-C2	4/3/2001	1
C	C-SP31	NBF-SP31-001108-C	11/8/2000	1.3
С	C2-SP64	NBF-SP64-010403-C2	4/3/2001	2.7
C	C2-SP72	NBF-SP72-010403-C2	4/3/2001	13
D	D-SP21	NBF-SP21-001107-D	11/7/2000	0.77 J
D	D-SP11	NBF-SP11-001107-D	11/7/2000	0.96 J
D	D-SP29	NBF-SP29-001108-D	11/8/2000	1.1
D	D-SP10	NBF-SP10-001107-D	11/7/2000	1.4
D	D1-SP17	NBF-SP17-001107-D1	11/7/2000	2.7
E	E-SP41	NBF-SP41-001109-E	11/9/2000	0.53 J
E	E-SP41	NBF-SP42-E (Dup of SP41)	11/9/2000	0.55 J
	E-SP03	NBF-SP3-001106-E	11/6/2000	5,2

TABLE 3
SUMMARY OF TOTAL PCB CONCENTRATIONS
NORTH BOEING FIELD

Joint Material	Location	Sample Identification	Date	Sum of Detected Aroclor Concentrations
Туре	LOCATION	Identification	Date	(mg/kg)
	F-SP05	NBF-SP5-001106-F	11/6/2000	ND
2.002 2.002	F-SP06	NBF-SP6-001106-F	11/6/2000	ND
-	F-SP36	NBF-SP36-001109-F	11/9/2000	ND
#	F-SP37	NBF-SP37-001109-F	11/9/2000	ND
F	F-SP38	NBF-SP38-001109-A	11/9/2000	ND
F	F-SP35	NBF-SP35-001109-F	11/9/2000	1.2
F	F-SP07	NBF-SP7-001106-F	11/6/2000	3.1
G	G-SP20	NBF-SP20-001107-G	11/7/2000	6.1
G	G-SP75	NBF-SP75-010403-G	4/3/2001	14.1
G	G-SP57	NBF-SP57-010402-G	4/2/2001	3,900
G	G-SP85 Res	NBF-SP85-010404-Res.G	4/4/2001	4,200
G	G-SP70 Res	NBF-SP70-010403-Res,G	4/3/2001	16,100
G	G-SP76 Res	NBF-SP76-010404-Res.G	4/4/2001	17,200
G	G-SP61 Res	NBF-SP61-010402-RES.G	4/2/2001	19,900
G	G-SP59 Res	NBF-SP59-010402-RES.G	4/2/2001	20,000
G	G-SP67 Res	NBF-SP67-010403-Res.G	4/3/2001	25,700
G	G-SP58	NBF-SP58-010402-G	4/2/2001	35,000
G	G-SP30	NBF-SP30-001108-G	11/8/2000	35,300
G	G-SP78	NBF-SP78-010404-G	4/4/2001	39,300
G	G-SP33	NBF-SP33-001108-G	11/8/2000	50,000
G	G-SP80 Res	NBF-SP80-010404-Res.G	4/4/2001	57,000
G	G-SP78	NBF-SP79 (Dup of 78)	4/4/2001	59,000
G	G-SP82	NBF-SP82-010404-G	4/4/2001	61,000
Н	H∗SP46	NBF-SP46-001109-H	11/9/2000	ND
Н	H-SP48	NBF-SP48-001109-H	11/9/2000	ND
Н	H-SP28	NBF-SP28-001108-H	11/8/2000	0.54 J
Н	H-SP15	NBF-SP15-001107-H	11/7/2000	1.7
Н	H-SP74 Res	NBF-SP74-010403-Res.H	4/3/2001	1.8
Н	H-SP47	NBF-SP47-001109-H	11/9/2000	3,9
Н	H-SP88	NBF-SP88-010404-H	4/4/2001	4.4
Н	H-SP86 Res	NBF-SP86-010404-Res.H	4/4/2001	8,1
Н	H-SP53	NBF-SP53-010402-H	4/2/2001	9
Н	H-SP22	NBF-SP22-001107-H	11/7/2000	11.6
Н	H-SP62	NBF-SP63 (Dup of 62)	4/3/2001	13.7
Н	H-SP62	NBF-SP62-010403-H	4/3/2001	17.3
H	H-SP09	NBF-SP9-001107-H	11/7/2000	19.9
H	H-SP77 Res	NBF-SP77-010404-Res.H	4/4/2001	20.5
Н	H-SP68 Res	NBF-SP68-010403-Res.H	4/3/2001	20.9
H	H-SP84 Res	NBF-SP84-010404-Res.H	4/4/2001	24
H	H-SP50	NBF-SP50-010402-H	4/2/2001	25.1
H	H-SP60 Res	NBF-SP60-010402-RES.H	4/2/2001	42
H	H-SP81 Res	NBF-SP81-010404-Res.H	4/4/2001	50
H	H-SP01	NBF-SP1-001106-H	11/6/2000	164
Н	H-SP49	NBF-SP49-010402-H	4/2/2001	270
Н	H-SP68 Res	NBF-SP69-010403-Res.H	4/3/2001	2,240

# TABLE 3 SUMMARY OF TOTAL PCB CONCENTRATIONS NORTH BOEING FIELD

Joint Material Type	Location*	Sample Identification	Date	Sum of Detected Arcolor Concentrations (mg/kg)
-	I-SP19	NBF-SP19-001107-I	11/7/2000	ND
vole	I-SP28	NBF-SP23-001108-I	11/8/2000	1.2
J	J-SP18	NBF-SP18-001107-J	11/7/2000	ND
J	J-SP34	NBF-SP34-001108-J	11/8/2000	1.1
K	K-SP51	NBF-SP51-010402-K	4/2/2001	ND
K	K-SP52	NBF-SP52-010402-K	4/2/2001	0.61 J
K	K-SP87	NBF-SP87-010404-K	4/4/2001	0.78 J

U = Indicates compound was analyzed for, but was not detected at the reported sample detection limit.
 J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

ND = Not detected.

TABLE 4
STATISTICAL SUMMARY - TYPES A, G, AND H JOINT MATERIAL TOTAL PCB DATA
NORTH BOEING FIELD

Statistical Parameter (a)	Туре А		Туре G	Туре Н	
Number of Samples	8		16	22	
Number of Detects	6		16	20	
Percent Non-Detects	25		O	9	
Minimum Detected Value (ppm)	0.78		6.1	0.54	
Maximum Detected Value (ppm)	79,000		60,000	2240	
Upper Confidence Limit (b)	79,000	(c)	36,996	433 (0	i)
Mean Detected Value (ppm)	28,349		27,726	134 (c	1)
Standard Deviation of Detected Values (ppm)	36,255		21,151	474 (c	I)
Median of Detected Values (ppm)	11,525		22,850	15.5 (c	i)

<sup>(</sup>a) Statistics are calculated using total detected PCB concentrations (i.e., sum of individual arcolor concentrations).

<sup>(</sup>b) The upper confidence limit was calculated using MTCAstat Version 2.0, unless otherwise noted.

<sup>(</sup>c) The data set was determined to be neither lognormally nor normally distributed by MTCAstat; therefore, in accordance with the Supplement to Statistical Guidance for Ecology Site Managers (Ecology 1993), the upper confidence level was set equal to the maximum concentration in the data set.

<sup>(</sup>d) The data set consists of less than 15 percent nondetects (i.e., no aroclors were detected in a sample). According to the *Supplement to Statistical Guidance for Ecology Site Managers* (Ecology 1993), the nondetected values are to be replaced with 1/2 the detection limit; however, because the data set consists of total PCB concentrations, a modification was made as follows: Only aroclors 1254 and 1260 were detected in Type A samples; therefore, 1/2 of the detection limit for each of these aroclors was summed and used as the total PCB concentration when no aroclors were detected in a sample. For example, for sample SP45, no aroclors were detected. The detection limit for aroclors 1254 and 1260 were 5 ppm and 8.5 ppm, respectively; therefore, a total PCB concentration of 6.75 ppm for sample SP45 was used to calulate the UCL, mean, standard deviation, and median of the Type A data set.

# **Laboratory Data Sheets**

November 17, 2000

Joan McGilton
The Boeing Company
Energy and Environmental Affairs
P.O. Box 3707, M/S 7A-XA
Seattle, WA 98124-2207

RE: Project: NBF KHRE: Project: NBF KHJoint Compound

ARI Job CK34

Dear Joan,

Please find enclosed the original Chain of Custody (COC) record and analytical results for the above referenced project. Seven solid samples were received in good condition on November 6, 2000.

LANDAU ASSUCIATES

Samples were analyzed for PCB Aroclors referencing EPA SW-846 method 8082. Extracts were cleaned up with sulfuric acid and elemental mercury to eliminate chromatographic interferences. Despite the cleanups, some analytes are reported with raised detection limits due to peak co-elution (see "Y" flag).

Several samples required extract dilution and reanalysis. Surrogate spikes were diluted out of the extracts.

Quality control analysis results are included for your review. A copy of this report will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Stephanie Lucas

Client Services

SPL/sl Enclosures

cc: Kris Hendrickson, Landau, Edmonds

# Chain of Custody Record & 1006/ Laboratory Analysis Request

Date: 11/6/00			
Page	of	1	
Number of coolers:			



Analytical Resources, Incorporated Analytical Chemist and Consultants 400 Ninth Avenue North Seattle, WA 98109-4708 (206) 621-6490

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Cli	ent Contact: Jaga McGill	501 M	C 71-	NH	70 TTD /#************************************		43		An-	alysis F	Required				Notes/Comments
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3	NBF-5/3-001106-E		13:45		/		7							***************************************	
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5	NBF-SP5-00/106-F		14:40		1		L	,							*
6	NBF-5P6-001106-F		15:00				X								
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Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following Standard Operating Procedures and our Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the client.



### SOIL AROCLOR SURROGATE SUMMARY

Matrix: Joint Compound

QC Report No: CK34

Project: NBF Concrete Joint Material

LIMS ID	123 17			DCBP #	TOT OUT
00-21055MB	110700MB	Method Blank	102%	98.0%	0
00-2105588	110700SB	Lab Control	106%	102%	0
00-21055	CK34A	SP1-001106-H	D	D	0
00-21056	CK34B	SP2-001106-C	93.5%	113%	0
00-21057	CK34C	SP3-001106-E	102%	91.0%	0
00-21058MB	110700MB	Method Blank	91.2%	101%	0
00-2105858	110700SB	Lab Control	93.5%	101%	0
00-21058	CK34E	SP5-001106-F	73.2%	72.5%	0
00-21059	CK34F	SP6-001106-F	72.2%	68.8%	C
00-21060	CK34G	SP7-001106-F	83.0%	72.5%	0
00-21061	CK34D	SP4-001106-B	80.5%	69.0%	0
00-21061MS	CK34D	SP4-001106-B-MS	98.5%	77.8%	0
00-21061MSD	CK34D	SP4-001106-B-MSD	99.2%	80.8%	0

# QC LIMITS

(TCMX) = Tetrachloro-m-xylene (34-128) (DCBP) = Decachlorobiphenyl (39-132)

- # Column to be used to flag recovery values
- \* Values outside of required QC limits
- D Surrogate Compound diluted out

Page 1 for CK34

FORM-II PCB



Sample No: Method Blank

Lab Sample ID: CK34MB

QC Report No: CK34-Boeing Corporate SHEA

LIMS ID: 00-21055

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Date Sampled: NA

Data Release Authorized:

Date Received: NA

(K.11710 Reported: 11/17/00

Date extracted: 11/07/00 Date analyzed: 11/12/00 13:47

GPC Cleanup: No Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.00 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	Ŭ
53469-21-9	Aroclor	1242	1,000	Ũ
12672-29-6	Aroclor	1248	1,000	Ü
11097-69-1	Aroclor	1254	1,000	U
11096-82-5	Aroclor	1260	1,000	Ü
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	U

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 98.0% Tetrachlorometaxylene 102%

- Indicates an estimated value when that result is less than the calculated detection limit.
- 6 Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Lab Sample ID: CK34

QC Report No: CK34-Boeing Corporate SHEA

LIMS ID: 00-21055

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Data Release Authorized:

Reported: 11/17/00

ORM/100

LABORATORY CONTROL SAMPLE SPIKE RECOVERY

Date extracted: 11/07/00

SPIKE

CONSTITUENT

SPIKE FOUND

ADDED

RECOVERY

LABORATORY CONTROL SAMPLE

Aroclor 1242

10200 10000

102%

Aroclor Surrogata Recoveries

Decachlorobiphenyl Tetrachlorometaxylene 102%

106%

Values Reported in Total ug/kg as received

# ORGANICS ANALYSIS DATA SHEET

PCB by GC/ECD



### Sample No: Method Blank

Lab Sample ID: CK34MB

LIMS ID: 00-21058

QC Report No: CK34-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Date Sampled: NA

Reported: 11/17/00 M NA

Date extracted: 11/07/00 GPC Cleanup: No Date analyzed: 11/16/00 23:35 Florisil Cleanup: Yes Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS Number	<u>Analyte</u>		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,000	U
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	IJ
11141-16-5	Aroclor	1232	1,000	U

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 101% Tetrachlorometaxylene 91.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out. D
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- R Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Lab Sample ID: CK34

QC Report No: CK34-Boeing Corporate SHEA

LIMS ID: 00-21058

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Data Release Authorized:

Reported: 11/17/00 (ACINITY)

LABORATORY CONTROL SAMPLE SPIKE RECOVERY

Date extracted: 11/07/00

SPIKE SPIKE CONSTITUENT FOUND ADDED RECOVERY

LABORATORY CONTROL SAMPLE

9690 10000 96.9% Aroclor 1242

Arotlor Surrogate Recoveries

Decachlorobiphenyl 101% Tetrachlorometaxylene 93.5%

Values Reported in Total ug/kg as received



Sample No: SP1-001106-H

Lab Sample ID: CK34A LIMS ID: 00-21055

QC Report No: CK34-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Date Sampled: 11/05/00

Data Release Authorized:

Date Received: 11/06/00

Reported: 11/17/00 0 10/1/100

Date extracted: 11/07/00 GPC Cleanup: No Date analyzed: 11/11/00 18:57 Florisil Cleanup: No

Instrument ID: ECD1

Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:20

### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	20,000	Ű
53469-21-9	Aroclor	1242	20,000	IJ
12672-29-6	Aroclor	1248	54,000	
11097-69-1	Aroclor	1254	110,000	
11096-82-5	Aroclor	1260	20,000	U
11104-28-2	Aroclor	1221	40,000	ŭ
11141-16-5	Aroclor	1232	20,000	U

# PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	D
Tetrachlorometaxylene	D

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. S Dilution Required
- Indicates no value reported due to saturation of the detector. C
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- 3 Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: SP2-001106-C

Lab Sample ID: CK348

QC Report No: CK34-Boeing Corporate SHEA

LIMS ID: 00-21056

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Date Sampled: 11/06/00

Data Release Authorized: 11/06/00
Reported: 11/17/00 CALLING Date Received: 11/06/00

Date extracted: 11/07/00

GPC Cleanup: No

Date analyzed: 11/11/00 19:53

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.02 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

# Reported in Total ug/kg as received

CAS Number	Analyta	and the second s	Value	
12674-11-2	Aroclor	1016	990	Ü
53469-21-9	Aroclor	1242	990	Ŭ
12672-29-6	Aroclor	1248	990	U
11097-69-1	Aroclor	1254	1,100	У
11096-82-5	Aroclor	1260	2,500	¥
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	990	U

# PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 113% 93.5% Tetrachlorometaxylene

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. 14 Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- MA Indicates compound was not analyzed.
- MR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: SP3-001106-E

Lab Sample ID: CK34C LIMS ID: 00-21057

QC Report No: CK34-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Matrix: Joint Compund

ed: Date Received: 11/06/00 Data Release Authorized:

Reported: 11/17/00

Date extracted: 11/07/00 GPC Cleanup: No Date analyzed: 11/13/00 10:49 Florisil Cleanup: No Instrument ID: BCD1 Acid Cleanup: Yes Sample Amount: 2.03 g-as-red Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Number	Analyte	200-20-00-00-00-00-00-00-00-00-00-00-00-	Valua	
12674-11-2	Aroclor	1016	980	Ŭ
53469-21-9	Aroclor	1242	980	Ű
12672-29-6	Aroclor	1248	980	Ü
11097-69-1	Aroclor	1254	980	Ü
11095-82-5	Aroclor	1260	5,200	
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	930	U

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 91.0% Tetrachlorometaxylene 102%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector. S
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank 8
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: SP4-001105-B

Lab Sample ID: CK34D

QC Report No: CK34-Boeing Corporate SHEA

LIMS ID: 00-21061

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Date Sampled: 11/06/00

Data Release Authorized:

Date Received: 11/06/00

Reported: 11/17/00 (10/1/100)

GPC Cleanup: No

Date extracted: 11/07/00

Date analyzed: 11/13/00 12:46

Instrument ID: ECD1

Sample Amount: 2.00 g-as-rec

Final Ext Vol: 20 mL

Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: No
Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor 10	16	1,000	U
53469-21-9	Aroclor 12	42	1,000	Ŭ
12672-29-6	Aroclor 12	48	1,000	U
11097-69-1	Aroclor 12	54	780	J
11096-82-5	Aroclor 12	60	1,000	Ü
11104-28-2	Aroclor 12	21	2,000	U
11141-16-5	Aroclor 12	32	1,000	U
11141-16-5	Aroclor 12	32	1,000	U

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 69.0% Tetrachlorometaxylene 80.5%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sampla No: SP4-001106-B

MATRIX SPIKE

Lab Sample ID: CK34DMS

QC Report No: CK34-Boeing Corporate SHEA

LIMS ID: 00-21061

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Date Sampled: 11/06/00

Data Release Authorized:

Reported: 11/17/00

Date Received: 11/06/00

Date extracted: 11/07/00

GPC Cleanup: No

Date analyzed: 11/13/00 13:24

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sulfur Cleanup: No

Sample Amount: 2.00 g-as-rec Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	Ü
53469-21-9	Aroclor	1242	-	
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,000	U
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	U
11141-15-5	Aroclor	1232	1,000	Ü

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 77.8% Tetrachlorometaxylene 98.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- В Found in associated method blank
- Indicates compound was not analyzed. NA
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: SP4-001106-B SPIKE DUPLICATE

Lab Sample ID: CK34DMSD

QC Report No: CK34-Boeing Corporate SHEA

LIMS ID: 00-21061

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Date Sampled: 11/06/00

Reported: 11/17/00 (NC

Date extracted: 11/07/00

GPC Cleanup: No Florisil Cleanup: No

Date analyzed: 11/13/00 14:02

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.02 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

## Reported in Total ug/kg as received

CAS Number	Analyte	programa popular de la company de programa de la company de la company de la company de la company de la compa	Value	
12674-11-2	Aroclor	1016	990	Ü
53469-21-9	Aroclor	1242	-990	~ ~~
12672-29-6	Aroclor	1248	990	U
11097-69-1	Aroclor	1254	990	U
11096-82-5	Aroclor	1260	990	ប
11104-28-2	Aroclor	1221	2,000	Ũ
11141-16-5	Aroclor	1232	990	U

# PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 80.8% Tetrachlorometaxylene 99.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- 77 Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: SP4-001106-B

Lab Sample ID: CK34D

QC Report No: CK34-Boeing Corporate SHEA

LIMS ID: 00-21061

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Date Received: 11/06/00

Data Release Authorized:

Reported: 11/17/00 (11/17/00

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Date extracted: 11/07/00

CONSTITUENT	_	MPLE ALUE	SPIKE FOUND	SPIKE	% RECOVERY	RPD
MATRIX SPIKE						
Aroclor 1242 MATRIX SPIKE DUPLICATE	<	1000	8120	10000	81.2%	
Aroclor 1242	<	1000	8050	9900	81.3%	0.1%

Values Reported in Total ug/kg as received



Sample No: SP5-001106-F

Lab Sample ID: CK34E LIMS ID: 00-21058

QC Report No: CK34-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Date Sampled: 11/06/00
Date Received: 11/06/00
Date Received: 11/06/00
Date Received: 11/06/00

GPC Cleanup: No

Date extracted: 11/07/00 Date analyzed: 11/17/00 01:55 Florisil Cleanup: Yes

Acid Cleanup: Yes Instrument ID: ECD1 Sample Amount: 2.03 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS Number	Analyta	الله (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱) (۱۳۵۱)	Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242	980	Ũ
12672-29-6	Aroclor	1248	980	Ű
11097-69-1	Aroclor	1254	980	U
11096-82-5	Aroclor	1260	980	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	980	U

### PCB-Aroclor Surrogate Recovery

72.5% Decachlorobiphenyl Tetrachlorometaxylene 73.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out. enm.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- Indicates compound was not analyzed. NA
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses. NV
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: SP6-001106-F

Lab Sample ID: CK34F LIMS ID: 00-21059

QC Report No: CK34-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Matrix: Joint Compund

Lace Sampled: 11/06/00 Pace Sampled: 11/06/00 Reported: 11/17/00 While Received: 11/06/00

Date extracted: 11/07/00 GPC Cleanup: No Date analyzed: 11/17/00 02:52 Florisil Cleanup: Yes

Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.05 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS Number	· Analyte	<del></del>	Value	
12674-11-2	Aroclor	1016	980	IJ
53469-21-9	Aroclor	1242	980	U
12672-29-6	Aroclor	1248	980	U
11097-69-1	. Aroclor	1254	980	U
11096-82-5	Aroclor	1260	980	Ũ
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	980	U

# PCB-Aroclor Surrogata Recovery

Decachlorobiphenyl	68.	. 88
Tetrachlorometaxylene	72.	. 2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. 3 Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the Ü given detection limit.
- R Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: SP7-001106-F

Lab Sample ID: CK34G

QC Report No: CK34-Boeing Corporate SHEA

LIMS ID: 00-21060

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Date Sampled: 11/06/00

Reported: 11/17/00 (N) N) Date Received: 11/06/00

Date extracted: 11/07/00

GPC Cleanup: No

Date analyzed: 11/17/00 03:48

Florisil Cleanup: Yes

Instrument ID: ECD1

Acid Cleanup: Yes Sulfur Cleanup: No

Sample Amount: 2.02 g-as-rec

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

# Reported in Total ug/kg as received

CAS Number	Analyta	allinggy on a consequence of the control of the con	Value	
12674-11-2	Aroclor	1016	990	U
53469-21-9	Aroclor	1242	990	U
12672-29-6	Aroclor	1248	990	U
11097-69-1	Aroclar	1254	1,500	
11096-82-5	Aroclor	1.260	1,600	
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	990	Ü

# PCB-Aroclor Surrogata Recovery

Decachlorobiphenyl 72.5% Tetrachlorometaxylene 83.0%

- Indicates an estimated value when that result is less than the calculated detection limit.
- 74 Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out, D
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank 3
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



November 27, 2000

Joan McGilton
The Boeing Company
Energy and Environmental Affairs
P.O. Box 3707, M/S 7A-XA
Seattle, WA 98124-2207

NBF XX

RE: Project: Joint Compound
ARI Job CK70

Dear Joan,

Please find enclosed the original Chain of Custody (COC) record and analytical results for the above referenced project. Fifteen solid samples were received in good condition on November 7, 2000.

Samples were analyzed for PCB Aroclors referencing EPA SW-846 method 8082. Extracts were cleaned up with sulfuric acid and elemental mercury to eliminate chromatographic interferences.

Sample NBF-SP14-001107-A required extract dilution and reanalysis. Surrogate spikes were diluted out of the extract.

Quality control analysis results are included for your review. A copy of this report will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Stephanie Lueas Client Services

SPL/sl Enclosures

cc: Kris Hendrickson, Landau, Edmonds

# Chain of Custody Record & Laboratory Analysis Request

- information y standings	s incur	*COL							of <u>3</u>	Western Control		p., 47		wenue North 98109-4708	
ARI Client: Boel 19	154	Number of coolers: Cooler Temp: 2 · O						(206) 621-6490 (206) 621-7523 (Fax)							
Client Contact: Joan McGilt		2		Analy	sis Red	quired				Notes/Comme	nts				
Client Project ID: NBF Cincre	-					18/3			who have the same the					Name of the second seco	
Samplers: Jennifer Parson					**************************************	10.5			water 44/Attention			and the state of t	One of the second		
Sample ID		Time	Matx	No	Lab ID	PCO: W			en de manier des formes des formes des	мунаниям проделужений председений председе			-Q-a-00-00/A-q		
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NBF-SP9-001107-H	1 0	8;20				X				Annual Control		************	A	Addition of the state of the st	
3 NBF-SP10-001107-D	0	3:40				X			A CONTRACTOR OF THE PARTY OF TH		-			www.to.www.mounter.co.wmg.acco.go.go.	A
NBF-SP11-001107-D	0.	1:00				X	HAVE AND A STATE OF THE STATE O			Control of the Contro					*****
NEF-SP12-001107-B1	0	9:15			***************************************	x								64 dilan Nakurtahahahahaha 1941 (Adidahan melandan mendaman mendam	***************************************
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Analytical Resources, Incorporated Analytical Chemist and Consultants

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following Standard Operating Procedures and our Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI releases. ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the client.

\* - 69-2- - 590-7KV190-1201-6/21/

# C...in C. Ct.ody Record C. Laboratory Analysis Request

6



halyt Reso ), Inc. Frate **Analytical Chemist and Consultants** 400 Ninth Avenue North Seattle, WA 98109-4708

ARI Client: Boeing	Pho	4z ne#: <u>86</u>	5 5-69	Number of coolers: _ Cooler Temp:		(206) 621-6490 (206) 621-7523 (Fax)			
Client Contact: Joan Mc Gill	<u>ora</u>		*****************************		•	sis Required	Notes/Comments		
Client Project ID: NBF Concre	te First Plan	wial			M. S.				
Samplers: Jean for Parsnes	Ernie Carlson	t		25%					
Sample ID	Date Time	Matx	No Cont	Lab ID	PSB3 GPA3				
1 NBF-SP15-001107-H	11/7/00 10:15	S	1		X				
2 NBF-SP16-001107-B	10:45				X				
3 NBF-SP17-001107-DI	11:20	***************************************			X				
4 NBF-SP18-001107-J	11:55			A Company of the Comp	X				
5 NBF-SP19-00/107-I					X				
6 NBF-SP20-001107-G	12:45				X			The state of the s	
7 NBF-SPZ1-001107-D	V 13:05	1 7/ 3			$\times$			The state of the s	
ARI Project No:	Relinquished by (Signature) Printed Name:	fer/Pe	eviland	)	Relinquished by: (Signature)		Relinquished by: (Signature)		
T.A.T. Requested: Skudand 2 wk	Printed Name: Jennifer Par	3025			Printed Name:		Printed Name:		
Comments/Special Instructions:	Company: Boei	ng			Company:	The second of the second of the second second second of the second second of the second secon	Company:		
Colo Results to Athi: Date: 14:33					Date:	Time:	Date:	Time:	
Kris Hendrickson (Signature) & Candan Associated Free Printed Name:				Received by: (Signature)		Received by: (Signature)			
				Printed Name:		Printed Name:	A CONTRACTOR OF THE PROPERTY O		
Target PQL = long/kg Company:  Printed Name: M (1) M(5)  Company: A(6)				Company:		Company:			
Boxing Chargelling Date: 11/7/60 Time: 1-132					Date: Time: D		Date:	Time:	

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following Standard Operating Procedures and our Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI releases. ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreemen between ARI and the client.  $8-6.4292-\times690-7K+690-6/124/-6/124/$ 

# **Chain of Custody Record & Laboratory Analysis Request**

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	plers: Jennifer Parsons						38		Additional Primmum, Advantion	N-4000000000000000000000000000000000000							
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CO GU-92-4690-7KV690-G1941. 1/3.



### SOIL AROCLOR SURROGATE SUMMARY

Matrix: Joint Compound

QC Report No: CK70

Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-G1241-G1241

00-21341MB         111300MB         Method Blank         107%         104%         0           00-21341SB         111300SB         Lab Control         109%         106%         0           00-21341         CK70A         NBF-SP8-001107-B         75.8%         82.0%         0           00-21342         CK70B         NBF-SP9-001107-H         88.8%         97.8%         0           00-21343         CK70C         NBF-SP10-001107-D         90.2%         82.2%         0           00-21344         CK70D         NBF-SP11-001107-D         86.0%         83.5%         0           00-21345         CK70E         NBF-SP12-001107-B1         78.5%         82.8%         0           00-21346         CK70F         NBF-SP13-001107-B1         73.2%         79.2%         0           00-21347         CK70G         NBF-SP14-001107-B         74.8%         80.8%         0           00-21348         CK70H         NBF-SP15-001107-H         74.8%         80.8%         0           00-21349         CK70I         NBF-SP16-001107-B         108%         114%         0           00-21351         CK70K         NBF-SP18-001107-J-MS         76.3%         87.2%         0           00-21351MSD	LIMS ID	Lab ID	Client ID	TOMX #	DCBP # T	TUO TO
00-21341SB         111300SB         Lab Control         109%         106%         0           00-21341         CK70A         NBF-SP8-001107-B         75.8%         82.0%         0           00-21342         CK70B         NBF-SP9-001107-H         88.8%         97.8%         0           00-21343         CK70C         NBF-SP10-001107-D         90.2%         82.2%         0           00-21344         CK70D         NBF-SP11-001107-D         86.0%         83.5%         0           00-21345         CK70E         NBF-SP12-001107-B1         78.5%         82.8%         0           00-21346         CK70F         NBF-SP13-001107-B1         73.2%         79.2%         0           00-21347         CK70G         NBF-SP14-001107-A         D         D         D           00-21348         CK70H         NBF-SP15-001107-H         74.8%         80.8%         0           00-21349         CK70I         NBF-SP16-001107-B         108%         114%         0           00-21351         CK70K         NBF-SP18-001107-J         87.5%         90.8%         0           00-21351MS         CK70K         NBF-SP18-001107-J-MS         76.8%         87.2%         0           00-21352						
00-21341         CK70A         NBF-SP8-001107-B         75.8%         82.0%         0           00-21342         CK70B         NBF-SP9-001107-H         88.8%         97.8%         0           00-21343         CK70C         NBF-SP10-001107-D         90.2%         82.2%         0           00-21344         CK70D         NBF-SP11-001107-D         86.0%         83.5%         0           00-21345         CK70E         NBF-SP12-001107-B1         78.5%         82.8%         0           00-21346         CK70F         NBF-SP13-001107-B1         73.2%         79.2%         0           00-21347         CK70G         NBF-SP13-001107-A         D         D         D         0           00-21348         CK70H         NBF-SP15-001107-H         74.8%         80.8%         0           00-21349         CK70I         NBF-SP16-001107-B         108%         114%         0           00-21350         CK70J         NBF-SP18-001107-D         87.2%         90.8%         0           00-21351         CK70K         NBF-SP18-001107-J-MS         76.8%         87.2%         0           00-21351MSD         CK70K         NBF-SP18-001107-J-MSD         78.0%         86.2%         0	00-21341MB	111300MB	Method Blank	107%	104%	0
00-21342         CK70B         NBF-SP9-001107-H         88.8%         97.8%         0           00-21343         CK70C         NBF-SP10-001107-D         90.2%         82.2%         0           00-21344         CK70D         NBF-SP11-001107-D         86.0%         83.5%         0           00-21345         CK70E         NBF-SP12-001107-B1         78.5%         82.8%         0           00-21346         CK70F         NBF-SP13-001107-B1         73.2%         79.2%         0           00-21347         CK70G         NBF-SP14-001107-A         D         D         D           00-21348         CK70H         NBF-SP15-001107-H         74.8%         80.8%         0           00-21349         CK70I         NBF-SP16-001107-B         10.8%         11.4%         0           00-21350         CK70J         NBF-SP18-001107-J         87.5%         90.8%         0           00-21351MS         CK70K         NBF-SP18-001107-J-MSD         76.8%         87.2%         0           00-21352         CK70L         NBF-SP19-001107-I         78.0%         93.2%         0           00-21353         CK70M         NBF-SP20-001107-G         11.6%         10.5%         0           00-21354	00-21341SB	111300SB	Lab Control	109%	106%	0
00-21343         CK70C         NBF-SP10-001107-D         90.2%         82.2%         0           00-21344         CK70D         NBF-SP11-001107-D         86.0%         83.5%         0           00-21345         CK70E         NBF-SP12-001107-B1         78.5%         82.8%         0           00-21346         CK70F         NBF-SP13-001107-B1         73.2%         79.2%         0           00-21347         CK70G         NBF-SP14-001107-A         D         D         0           00-21348         CK70H         NBF-SP15-001107-H         74.8%         80.8%         0           00-21349         CK70I         NBF-SP16-001107-B         108%         114%         0           00-21350         CK70J         NBF-SP17-001107-D         87.2%         90.8%         0           00-21351         CK70K         NBF-SP18-001107-J-MS         76.8%         87.2%         0           00-21351MSD         CK70K         NBF-SP18-001107-J-MSD         78.0%         86.2%         0           00-21352         CK70L         NBF-SP19-001107-I         78.0%         93.2%         0           00-21353         CK70M         NBF-SP20-001107-D         81.5%         93.5%         0	00-21341	CK70A	NBF-SP8-001107-B	75.8%	82.0%	0
00-21344         CK70D         NBF-SP11-001107-D         86.0%         83.5%         0           00-21345         CK70E         NBF-SP12-001107-B1         78.5%         82.8%         0           00-21346         CK70F         NBF-SP13-001107-B1         73.2%         79.2%         0           00-21347         CK70G         NBF-SP14-001107-A         D         D         D           00-21348         CK70H         NBF-SP15-001107-H         74.8%         80.8%         0           00-21349         CK70I         NBF-SP16-001107-B         10.8%         114%         0           00-21350         CK70J         NBF-SP17-001107-D1         87.2%         90.8%         0           00-21351         CK70K         NBF-SP18-001107-J-MS         76.8%         87.2%         0           00-21351MSD         CK70K         NBF-SP18-001107-J-MSD         78.0%         86.2%         0           00-21352         CK70L         NBF-SP19-001107-I         78.0%         93.2%         0           00-21353         CK70M         NBF-SP20-001107-G         116%         105%         0           00-21354         CK70N         NBF-SP21-001107-D         81.5%         93.5%         0	00-21342	CK70B	NBF-SP9-001107-H	88.88	97.8%	0
00-21345         CK70E         NBF-SP12-001107-B1         78.5%         82.8%         0           00-21346         CK70F         NBF-SP13-001107-B1         73.2%         79.2%         0           00-21347         CK70G         NBF-SP14-001107-A         D         D         D           00-21348         CK70H         NBF-SP15-001107-H         74.8%         80.8%         0           00-21349         CK70I         NBF-SP16-001107-B         108%         114%         0           00-21350         CK70J         NBF-SP17-001107-D1         87.2%         90.8%         0           00-21351         CK70K         NBF-SP18-001107-J-MS         76.8%         87.2%         0           00-21351MSD         CK70K         NBF-SP18-001107-J-MSD         78.0%         86.2%         0           00-21352         CK70L         NBF-SP19-001107-I         78.0%         93.2%         0           00-21353         CK70M         NBF-SP20-001107-G         116%         105%         0           00-21354         CK70N         NBF-SP21-001107-D         81.5%         93.5%         0	00-21343	CK70C	NBF-SP10-001107-D	90.2%	82.2%	0
00-21346         CK70F         NBF-SP13-001107-B1         73.2%         79.2%         0           00-21347         CK70G         NBF-SP14-001107-A         D         D         0           00-21348         CK70H         NBF-SP15-001107-H         74.8%         80.8%         0           00-21349         CK70I         NBF-SP16-001107-B         108%         114%         0           00-21350         CK70J         NBF-SP17-001107-D1         87.2%         90.8%         0           00-21351         CK70K         NBF-SP18-001107-J-MS         76.3%         87.2%         0           00-21351MS         CK70K         NBF-SP18-001107-J-MSD         78.0%         86.2%         0           00-21352         CK70L         NBF-SP19-001107-I         78.0%         93.2%         0           00-21353         CK70M         NBF-SP20-001107-G         116%         105%         0           00-21354         CK70N         NBF-SP21-001107-D         81.5%         93.5%         0	00-21344	CK70D	NBF-SP11-001107-D	86.0%	83.5%	0
00-21347         CK70G         NBF-SP14-001107-A         D         D         O           00-21348         CK70H         NBF-SP15-001107-H         74.8%         80.8%         O           00-21349         CK70I         NBF-SP16-001107-B         108%         114%         O           00-21350         CK70J         NBF-SP17-001107-D1         87.2%         90.8%         O           00-21351         CK70K         NBF-SP18-001107-J         87.5%         90.8%         O           00-21351MS         CK70K         NBF-SP18-001107-J-MS         76.3%         87.2%         O           00-21351MSD         CK70K         NBF-SP18-001107-J-MSD         78.0%         86.2%         O           00-21352         CK70L         NBF-SP19-001107-I         78.0%         93.2%         O           00-21353         CK70M         NBF-SP20-001107-G         116%         105%         O           00-21354         CK70N         NBF-SP21-001107-D         81.5%         93.5%         O	00-21345	CK70E	NBF-SP12-001107-B1	78.5%	82.8%	0
00-21348         CK70H         NBF-SP15-001107-H         74.8%         80.8%         0           00-21349         CK70I         NBF-SP16-001107-B         108%         114%         0           00-21350         CK70J         NBF-SP17-001107-D1         87.2%         90.8%         0           00-21351         CK70K         NBF-SP18-001107-J         87.5%         90.8%         0           00-21351MS         CK70K         NBF-SP18-001107-J-MS         76.3%         87.2%         0           00-21351MSD         CK70K         NBF-SP18-001107-J-MSD         78.0%         86.2%         0           00-21352         CK70L         NBF-SP19-001107-I         78.0%         93.2%         0           00-21353         CK70M         NBF-SP20-001107-G         116%         105%         0           00-21354         CK70N         NBF-SP21-001107-D         81.5%         93.5%         0	00-21346	CK70F	NBF-SP13-001107-B1	73.2%	79.2%	G
00-21349         CK70I         NBF-SP16-001107-B         108%         114%         0           00-21350         CK70J         NBF-SP17-001107-D1         87.2%         90.8%         0           00-21351         CK70K         NBF-SP18-001107-J         87.5%         90.8%         0           00-21351MS         CK70K         NBF-SP18-001107-J-MS         76.8%         87.2%         0           00-21351MSD         CK70K         NBF-SP18-001107-J-MSD         78.0%         86.2%         0           00-21352         CK70L         NBF-SP19-001107-I         78.0%         93.2%         0           00-21353         CK70M         NBF-SP20-001107-G         116%         105%         0           00-21354         CK70N         NBF-SP21-001107-D         81.5%         93.5%         0	00-21347	CK70G	NBF-SP14-001107-A	D	D	0
00-21350         CK70J         NBF-SP17-001107-D1         87.2%         90.8%         0           00-21351         CK70K         NBF-SP18-001107-J         87.5%         90.8%         0           00-21351MS         CK70K         NBF-SP18-001107-J-MS         76.8%         87.2%         0           00-21351MSD         CK70K         NBF-SP18-001107-J-MSD         78.0%         86.2%         0           00-21352         CK70L         NBF-SP19-001107-I         78.0%         93.2%         0           00-21353         CK70M         NBF-SP20-001107-G         116%         105%         0           00-21354         CK70N         NBF-SP21-001107-D         81.5%         93.5%         0	00-21348	CK70H	NBF-SP15-001107-H	74.8%	80.8%	0
00-21351         CK70K         NBF-SP18-001107-J         87.5%         90.8%         0           00-21351MS         CK70K         NBF-SP18-001107-J-MS         76.8%         87.2%         0           00-21351MSD         CK70K         NBF-SP18-001107-J-MSD         78.0%         86.2%         0           00-21352         CK70L         NBF-SP19-001107-I         73.0%         93.2%         0           00-21353         CK70M         NBF-SP20-001107-G         116%         105%         0           00-21354         CK70N         NBF-SP21-001107-D         81.5%         93.5%         0	00-21349	CK70I	NBF-SP16-001107-B	108%	114%	0
00-21351MS     CK70K     NBF-SP18-001107-J-MS     76.8%     87.2%     0       00-21351MSD     CK70K     NBF-SP18-001107-J-MSD     78.0%     86.2%     0       00-21352     CK70L     NBF-SP19-001107-I     78.0%     93.2%     0       00-21353     CK70M     NBF-SP20-001107-G     116%     105%     0       00-21354     CK70N     NBF-SP21-001107-D     81.5%     93.5%     0	00-21350	CK70J	NBF-SP17-001107-D1	87.2%	90.8%	0
00-21351MSD CK70K     NBF-SP18-001107-J-MSD     78.0%     86.2%     0       00-21352 CK70L     NBF-SP19-001107-I     78.0%     93.2%     0       00-21353 CK70M     NBF-SP20-001107-G     116%     105%     0       00-21354 CK70N     NBF-SP21-001107-D     81.5%     93.5%     0	00-21351	CK70K	NBF-SP18-001107-J	87.5%	90.8%	0
00-21352 CK70L NBF-SP19-001107-I 78.0% 93.2% 0 00-21353 CK70M NBF-SP20-001107-G 116% 105% 0 00-21354 CK70N NBF-SP21-001107-D 81.5% 93.5% 0	00-21351MS	CK70K	NBF-SP18-001107-J-MS	76.8%	87.2%	0
00-21353 CK70M NBF-SP20-001107-G 116% 105% 0 00-21354 CK70N NBF-SP21-001107-D 81.5% 93.5% 0	00-21351MSD	CK70K	NBF-SP18-001107-J-MSD	78.0%	86.2%	0
00-21354 CK70N NBF-SP21-001107-D 81.5% 93.5% 0	00-21352	CK70L	NBF-SP19-001107-I	78.0%	93.2%	Q
	00-21353	CK70M	NBF-SP20-001107-G	116%	105%	0
00-21355 CK700 NBF-SP22-001107-H 69.8% 80.8% 0	00-21354	CK70N	NBF-SP21-001107-D	81.5%	93.5%	0
	00-21355	CK700	NBF-SP22-001107-H	69.8%	80.8%	0

### QC LIMITS

(TCMX) = Tetrachloro-m-xylene (34-128) (DCBP) = Decachlorobiphenyl (39-132)

- # Column to be used to flag recovery values
- \* Values outside of required QC limits
- D Surrogate Compound diluted out

Page 1 for CK70

FORM-II PCB



### Sample No: Method Blank

Lab Sample ID: CK70MB LIMS ID: 00-21341 QC Report No: CK70-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7XX690-G1241-G1241

Date Sampled: NA

Data Release Authorized:

100

Date Received: NA

Reported: 11/27/00

1/27/00 00 m/20/00

Date extracted: 11/13/00
Date analyzed: 11/16/00 22:38

GPC Cleanup: No Florisil Cleanup: No Acid Cleanup: Yes

Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	Ü
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,000	U
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	U

# PCB-Aroclor Surrogata Racovery

Decachlorobiphenyl 104% Tetrachlorometaxylene 107%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP8-001107-B

Lab Sample ID: CK70A LIMS ID: 00-21341 Matrix: Joint Compound QC Report No: CK70-Boeing Corporate SHEA Project: NBF Concrete Joint Material

8-G4292-X690-7XX690-G1241-G1241

Date Sampled: 11/07/00

Reported: 11/27/00 WWW Date Received: 11/07/00

Date extracted: 11/13/00

GPC Cleanup: No Date analyzed: 11/21/00 21:31 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.04 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Number	Analyta	ندان المنظمة المنظمية في المنظمة المنظ ولا المنظمة ال	Value	
12674-11-2	Aroclor	1016	980	Ü
53469-21-9	Aroclor	1242	980	U
12672-29-6	Aroclor	1248	980	U
11097-69-1	Aroclor	1254	32,000	
11096-82-5	Arcclor	1260	9,900	
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Aroclor	1232	980	Ũ

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 82.0% Tetrachlorometaxylene 75.8%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- 13 Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP9-001107-H

Lab Sample ID: CK70B

QC Report No: CK70-Boeing Corporate SHEA

LIMS ID: 00-21342

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7KX690-G1241-G1241

Date Sampled: 11/07/00

Reported: 11/27/00 WWW

Date Received: 11/07/00

Date extracted: 11/13/00

GPC Cleanup: No Florisil Cleanup: No

Date analyzed: 11/22/00 08:01 Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.01 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

# Reported in Total ug/kg as received

CAS Number	Analyta		Value	
12674-11-2	Aroclor	1016	1,000	Ü
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	7,900	
11096-82-5	Aroclor	1260	12,000	
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Aroclor	1232	1,000	U

### PCB-Aroclor Surrogate Recovery

97.8% Decachlorobiphenyl Tetrachlorometaxylene 88.88

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- 2 Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: MBF-SP8-001107-B

Lab Sample ID: CK70A LIMS ID: 00-21341 Matrix: Joint Compound QC Report No: CK70-Boeing Corporate SHEA Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-G1241-G1241

Reported: 11/27/00 WND Date Received: 11/07/00

Date extracted: 11/13/00 GPC Cleanup: No Date analyzed: 11/21/00 21:31 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sulfur Cleanup: No Sample Amount: 2.04 g-as-rec Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS	Number	Analyte		Value	
	11111111				
1267	4-11-2	Aroclor	1016	980	Ü
5346	9-21-9	Aroclor	1242	980	Ű
1267	72-29-6	Aroclor	1248	980	Ű
1109	97-69-1	Aroclor	1254	32,000	
1109	96-82-5	Aroclor	1260	9,900	
1110	4-28-2	Aroclor	1221	2,000	U
1114	<u> 11-16-5</u>	Aroclor	1232	980	Ű

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl Tetrachlorometaxylene 75.8%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank B
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- V Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP9-001107-H

Lab Sample ID: CK70B LIMS ID: 00-21342 Matrix: Joint Compound QC Report No: CK70-Boeing Corporate SHEA Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-G1241-G1241

Date Sampled: 11/07/00

Date Received: 11/07/00

Data Release Authorized: 11/27/00 (X)

Date extracted: 11/13/00 GPC Cleanup: No Date analyzed: 11/22/00 08:01 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sulfur Cleanup: No Sample Amount: 2.01 g-as-rec Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12574-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	7,900	
11096-82-5	Aroclor	1260	12,000	
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	Ü

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 97.8% Tetrachlorometaxylene 88.88

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP10-001107-D

Lab Sample ID: CK70C

QC Report No: CK70-Boeing Corporate SHEA

LIMS ID: 00-21343

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7KX690-G1241-G1241

Data Release Authorized: MID Date Received: 11/07/00 Reported: 11/27/00 Date Received: 11/07/00

Date Sampled: 11/07/00

Date extracted: 11/13/00

GPC Cleanup: No

Date analyzed: 11/21/00 22:05

Florisil Cleanup: No Acid Cleanup: Yes

Instrument ID: ECD1 Sample Amount: 2.02 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

# Reported in Total ug/kg as received

CAS Number	Analyta		Value	
12674-11-2	Aroclor	1016	990	U
53469-21-9	Aroclor	1242	990	U
12672-29-6	Aroclor	1248	990	U
11097-69-1	Aroclor	1254	1,400	
11096-82-5	Aroclor	1260	990	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	990	Ŭ

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	82.2%
Tetrachlorometaxvlene	90.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- 17 Indicates compound was analyzed for, but not detected at the given detection limit.
- В Found in associated method blank
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. Y The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP11-001107-D

Lab Sample ID: CK70D LIMS ID: 00-21344 Matrix: Joint Compound QC Report No: CK70-Boeing Corporate SHEA Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-G1241-G1241

Reported: 11/27/00 Accessed: 11/07/00 Date Received: 11/07/00

Date extracted: 11/13/00 GPC Cleanup: No Florisil Cleamup: No Date analyzed: 11/22/00 01:24 Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.01 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	Ũ
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	960	J
11096-82-5	Aroclor	1260	1,000	Ü
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Aroclor	1232	1,000	Ü

# PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 83.5% Tetrachlorometaxylene 86.0%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- В Found in associated method blank
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP12-001107-B1-

Lab Sample ID: CK70E

QC Report No: CK70-Boeing Corporate SHEA

LIMS ID: 00-21345

Project: NBF Concrete Joint Material 8-G4292-X690-7XX690-G1241-G1241

Matrix: Joint Compound

Luce sampled: 11/07/00 Luce sampled: 11/07/00 Date Received: 11/07/00 Reported: 11/27/00 WWW.

Date extracted: 11/13/00

GPC Cleanup: No

Date analyzed: 11/22/00 04:09

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.02 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

# Reported in Total ug/kg as received

CAS Number	Analyte	······································	<u> </u>	
		•		
12674-11-2	Aroclor	1016	990	U
53469-21-9	Aroclor	1242	990	U
12672-29-6	Aroclor	1248	990	U
11097-69-1	Aroclor	1254	540	Ĵ
11096-82-5	Aroclor	1260	990	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	990	U

# PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 82.8% Tetrachlorometaxylene 78.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- $\mathbf{S}$ Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- ĨΤ Indicates compound was analyzed for, but not detected at the given detection limit.
- 8 Found in associated method blank
- Indicates compound was not analyzed. NA
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses. NV
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



100

Sample No: NBF-SP13-001107-B1

Lab Sample ID: CK70F QC Report No: CK70-Boeing Corporate SHEA LIMS ID: 00-21346 Project: NBF Concrete Joint Material

Matrix: Joint Compound 8-G4292-X690-7KX690-G1241-G1241

ed: 11/07/00 Date Received: 11/07/00 Data Release Authorized:

Reported: 11/27/00

Date extracted: 11/13/00 GPC Cleanup: No Date analyzed: 11/22/00 09:08 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.04 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS	Number	Analyte	************************************	Value	
* * ~ ~ **	4 17 0	3	ناسر بد رمان په	200	
	4-11-2 9-21-9	Aroclor		980 980	_
	2-29-6	Aroclor		980	
1109	7-69-1	Aroclor	1254	660	J
1109	6-82-5	Aroclor	1260	980	U
1110	4-28-2	Aroclor	1221	2,000	U
1114	1-16-5	Aroclor	1232	980	U

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 79.2% Tetrachlorometaxylene 73.28

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP14-001107-A

Lab Sample ID: CK70G LIMS ID: 00-21347

QC Report No: CK70-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-G1241-G1241

Matrix: Joint Compound

Date Sampled: 11/07/00

Data Release Authorized:

Date Received: 11/07/00

Reported: 11/27/00 (Rul7/100

GPC Cleanup: No

Date analyzed: 11/22/00 17:48

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes Sulfur Cleanup: No

Sample Amount: 2.04 g-as-rec

Final Ext Vol: 20 mL

Date extracted: 11/13/00

Conc/Dilution Factor: 1:1000

### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor 10	16	980,000	U
53469-21-9	Aroclor 12	242	980,000	U
12672-29-6	Aroclor 12	248	980,000	Ü
11097-69-1	Aroclor 12	254 2	000,000,	
11096-82-5	Arocler 12	260	980,000	Ü
11104-28-2	Aroclor 12	221	2,000,000	U
11141-16-5	Aroclor 12	332	980,000	U

## PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl Tetrachlorometaxylene

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- $\leq$ Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- 17 Indicates compound was analyzed for, but not detected at the given detection limit.
- 33 Found in associated method blank
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. 1/2 The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP15-001107-H

Lab Sample ID: CK70H

QC Report No: CK70-Boeing Corporate SHEA

LIMS ID: 00-21348

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7KX690-G1241-G1241

Date Sampled: 11/07/00

Reported: 11/27/00 M: 11/07/00

GPC Cleanup: No

Date analyzed: 11/22/00 10:14

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sulfur Cleanup: No

Sample Amount: 2.01 g-as-rec

Final Ext Vol: 20 mL

Date extracted: 11/13/00

Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	Ü
11097-69-1	Aroclor	1254	1,700	
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Aroclor	1232	1,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	80.8%
Tetrachlorometaxylene	74.8%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank B
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP16-001107-B

Lab Sample ID: CK70I

QC Report No: CK70-Boeing Corporate SHEA

LIMS ID: 00-21349

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7KX690-G1241-G1241

Date Sampled: 11/07/00

Reported: 11/27/00 MC/// Date Received: 11/07/00

GPC Cleanup: No

Date analyzed: 11/22/00 11:20

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.02 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Date extracted: 11/13/00

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	990	Ü
53469-21-9	Aroclor	1242	990	Ũ
12672-29-6	Aroclor	1248	990	$\mathbb{U}$
11097-69-1	Aroclor	1254	1,100	
11096-82-5	Aroclor	1260	990	Ü
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	990	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl Tetrachlorometaxylene 1088

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- 11 Indicates compound was analyzed for, but not detected at the given detection limit.
- 8 Found in associated method blank
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP17-001107-D1

Lab Sample ID: CK70J QC Report No: CK70-Boeing Corporate SHEA LIMS ID: 00-21350 Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-G1241-G1241

Date Sampled: 11/07/00

Release Authorized: 11/07/00

Data Release Authorized: Reported: 11/27/00 CLIM

Matrix: Joint Compound

Date extracted: 11/13/00
Date extracted: 11/13/00
Date analyzed: 11/22/00 01:57

Date extracted: 11/13/00 GPC Cleanup: No
Date analyzed: 11/22/00 01:57 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.03 g-as-rec Sulfur Cleanup: No
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242	980	Ü
12672-29-6	Aroclor	1248	980	U
11097-69-1	Aroclor	1254	2,700	
11096-82-5	Aroclor	1260	980	Ũ
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 90.8% Tetrachlorometaxylene 87.2%

- J Indicates an estimated value when that result is less than the calculated detection limit,
- E Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP44-001109-B1

MATRIX SPIKE

Lab Sample ID: CK85JMS QC Report No: CK85-Boeing Corporate SHEA LIMS ID: 00-21476

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00

Date Received: 11/09/00

Reported: 11/28/00 A. N. 100/150

Date extracted: 11/16/00 GPC Cleanup: No

Date analyzed: 11/25/00 22:58 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes

Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	Ũ
53469-21-9	Aroclor	1242	40- *	
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,000	Ū
11096-82-5	Aroclor	1260	1,000	Ü
11104-28-2	Aroclor	1221	2,000	Ű
11141-16-5	Aroclor	1232	1,000	Ű

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 96.2% Tetrachlorometaxylene 101%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank B
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: MBF-SP44-001109-B1

Lab Sample ID: CK85J

QC Report No: CK85-Boeing Corporate SHEA

LIMS ID: 00-21476

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00

Data Release Authorized:

Date extracted: 11/16/00

Date Received: 11/09/00

Reported: 11/28/00 (1/2/1/78/60

GPC Cleanup: No

Date analyzed: 11/25/00 22:25 Florisil Cleanup: No

Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.03 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	980	IJ
53469-21-9	Aroclor	1242	980	ŭ
12672-29-6	Aroclor	1248	980	U
11097-69-1	Aroclor	1254	980	U
11096-82-5	Aroclor	1260	980	U
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogata Recovery

Decachlorobiphenyl	77.5%
Tetrachlorometaxylene	79.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- Indicates compound was not analyzed. NA
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses. WV
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP43-001109-C

Lab Sample ID: CK85I LIMS ID: 00-21475

QC Report No: CK85-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00

Date Received: 11/09/00

Data Release Authorized: Reported: 11/28/00 (Links)

Date extracted: 11/16/00 GPC Cleanup: No Date analyzed: 11/25/00 16:20 Florisil Cleanup: No Acid Cleanup: Yes Instrument ID: ECD1 Sample Amount: 2.01 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,000	Ü
11096-82-5	Aroclor	1260	1,000	Ü
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	U

#### PCB-Arcclor Surrogate Recovery

Decachlorobiphenyl	97.2%
Tetrachlorometaxylene	205%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- 4 Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP42-001109-E

Lab Sample ID: CK85H

QC Report No: CK85-Boeing Corporate SHEA

LIMS ID: 00-21474

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00

Reported: 11/28/00 Million

Date Received: 11/09/00

Date extracted: 11/16/00 Date analyzed: 11/25/00 15:47

GPC Cleanup: No Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes Sulfur Cleanup: No

Sample Amount: 2.01 g-as-rec Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	550	Ĵ
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	Ŭ

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	108%
Tetrachlorometaxylene	120%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- IJ Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank 3
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP41-001109-E

Lab Sample ID: CK85G LIMS ID: 00-21473

QC Report No: CK85-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00

Reported: 11/28/00 PRINTED

Date Received: 11/09/00

Date extracted: 11/16/00 GPC Cleanup: No Date analyzed: 11/25/00 15:14 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.03 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Num	ber	Analyte	PCO++4A3*PCC*13+++(37-3C*1+-11-0C++++A-+**+A-+**+A-++++A-+**+A-+++A-+**+A-+**+A-+**+A-+**+A-+**+A-+**+A-+**+A	Value	
			`		
12674-1	1-2	Aroclor	1016	980	U
53469-2	1-9	Aroclor	1242	980	U
12672-2	9-6	Aroclor	1248	980	U
11097-6	9-1	Aroclor	1254	530	J
11096-8	2-5	Aroclor	1260	980	Ü
11104-2	8-2	Aroclor	1221	2,000	Ü
11141-1	5-5	Aroclor	1232	980	Ŭ

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	109%
Tetrachlorometaxvlene	127%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
  - U . Indicates compound was analyzed for, but not detected at the given detection limit.
  - Found in associated method blank 8
  - Indicates compound was not analyzed.
- . NR Indicates no recovery due to interferences.
  - NV Indicates no value reportable - see additional analyses.
  - Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP40-001109-B2

Lab Sample ID: CK85F

QC Report No: CK85-Boeing Corporate SHEA

LIMS ID: 00-21472

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00

Date Received: 11/09/00

Reported: 11/28/00 UK WE

Date extracted: 11/15/00 GPC Cleanup: No

Date analyzed: 11/27/00 15:37 Florisil Cleanup: No Acid Cleanup: Yes Instrument ID: ECD1

Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	Ü
12672-29-6	Aroclor	1248	1,000	Ü
11097-69-1	Aroclor	1254	1,000	U
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl Tetrachlorometaxylene 79.8%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
  - Indicates the surrogate was diluted out.
  - Indicates compound was analyzed for, but not detected at the given detection limit.
  - B Found in associated method blank
  - Indicates compound was not analyzed.
  - NR Indicates no recovery due to interferences.
  - NV Indicates no value reportable - see additional analyses.
  - Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP38-001109-A

Lab Sample ID: CK85D LIMS ID: 00-21470

QC Report No: CK85-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00 Data Release Authorized:

Reported: 11/28/00 (14

Date extracted: 11/16/00 GPC Cleanup: No Date analyzed: 11/26/00 09:29 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.01 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS	Number	Analyte		Value	
120	574-11-2	Aroclor	1016	1,000	U
534	169-21-9	Aroclor	1242	1,000	U
1.26	572-29-6	Aroclor	1248	1,400	X
110	097-69-1	Aroclor	1254	2,300	¥
110	96-82-5	Aroclor	1260	1,000	Ũ
111	104-28-2	Aroclor	1221	2,000	U
111	L41-16-5	Aroclor	1232	1,000	Ŭ

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 79.0% Tetrachlorometaxylene 88.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- 11 Indicates compound was analyzed for, but not detected at the given detection limit.
- 8 Found in associated method blank
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-S937-001109-F

Lab Sample ID: CK85C

QC Report No: CK85-Boeing Corporate SHEA

LIMS ID: 00-21469

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00

Data Release Authorized:

Reported: 11/28/00

Date Received: 11/09/00

Date extracted: 11/16/00

GPC Cleanup: No

Date analyzed: 11/25/00 05:03

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.04 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242	980	Ũ
12672-29-6	Aroclor	1248	980	U
11097-69-1	Aroclor	1254	1,100	¥
11096-82-5	Aroclor	1260	980	Ũ
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	83.0%
Tetrachlorometaxylene	105%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Q Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- MR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP39-001109-C1

Lab Sample ID: CK85E QC Report No: CK85-Boeing Corporate SHEA LIMS ID: 00-21471 Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00 Date Received: 11/09/00

Data Release Authorized: 11/28/00 Reported: 11/28/00

Date extracted: 11/16/00 GPC Cleanup: No
Date analyzed: 11/27/00 14:42 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.01 g-as-rec Sulfur Cleanup: No
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:20

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
****	*	en en en en	22.222	74 45
12674-11-2	Aroclor		20,000	
53469-21-9	Aroclor	1242	20,000	U
12672-29-6	Aroclor	1248	40,000	Y
11097-69-1	Aroclor	1254	270,000	Y
11096-82-5	Aroclor	1260	20,000	U
11104-28-2	Aroclor	1221	40,000	U
11141-16-5	Aroclor	1232	20,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	1
Tetrachlorometaxvlene	I

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP36-001109-F

Lab Sample ID: CK85B

QC Report No: CK85-Boeing Corporate SHEA

LIMS ID: 00-21468

Project: NBF Concrete Joint Material

Matrix: Solid

ed: 11/09/00 pare Received: 11/09/00

Data Release Authorized:

Reported: 11/28/00

GPC Cleanup: No

Date analyzed: 11/27/00 15:59

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes Sulfur Cleanup: No

Sample Amount: 2.01 g-as-rec

Date extracted: 11/16/00

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Arodior	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,000	U
11096-82-5	Aroclor	1360	1,000	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 88.2% Tetrachlorometaxylene 74,5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- 23 Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP35-001109-F

Lab Sample ID: CK85A

QC Report No: CK85-Boeing Corporate SHEA

LIMS ID: 00-21467

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00

Reported: 11/28/00 P. 128/00

Date Received: 11/09/00

GPC Cleanup: No

Date analyzed: 11/26/00 04:30

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.03 g-as-rec

Date extracted: 11/16/00

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Mumber	Analyta		Value
12674-11-2	Aroclor	1016	980 U
53469-21-9	Aroclor	1242	980 U
12672-29-6	Aroclor	1248	980 U
11097-69-1	Aroclor	1254	1,200
11096-82-5	Aroclor	1260	980 U
11104-28-2	Aroclor	1221	2,000 U
11141-16-5	Aroclor	1232	980 U

#### PCB-Aroclor Surrogate Recovery

79.2% Decachlorobiphenyl Tetrachlorometaxylene 90.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses. NV
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



#### SOIL AROCLOR SURROGATE SUMMARY

Matrix: Solid

QC Report No: CK85

Project: NBF Concrete Joint Material

livs ID	lab ID	Client ID		DCBP #	
00-21467MB	111600MB	Method Blank	116%	108%	O
00-21467SB	111600SB	Lab Control	117%	109%	0
00-21467	CK85A	NBF-SP35-001109-F	90.5%	79.2%	0
00-21468	CK85B	NBF-SP36-001109-F	74.5%	88.2%	0
00-21469	CK85C	NBF-SP37-001109-F	105%	83.0%	0
00-21470	CK85D	NBF-SP38-001109-A	88.2%	79.0%	0
00-21471	CK85E	NBF-SP39-001109-Cl	D	D	O
00-21472	CK85F	NBF-SP40-001109-B2	79.8%	82.8%	0
00-21473	CK85G	NBF-SP41-001109-E	127%	109%	Q
00-21474	CK85H	NBF-SP42-001109-E	120%	108%	0
00-21475	CK85I	NBF-SP43-001109-C	105%	97.2%	C
00-21475	CK85J	NBF-SP44-001109-B1	79.5%	77.5%	0
00-21476MS	CK85J	NBF-SP44-001109-B1-MS	101%	96.2%	G
00-21476MS	D CK85J	NBF-SP44-001109-B1-MSD	91.2%	93.8%	O
00-21477	CK85K.	NBF-SP45-001109-A	NR *	1098	49
00-21478	CK85L	NBF-SP46-001109-H	91.5%	88.5%	0
00-21479	CK85M	NBF-SP47-001109-H	85.5%	80.5%	Q
00-21480	CK85N	NBF-SP48-001109-H	94.8%	81.5%	O

#### QC LIMITS

(TCMX) = Tetrachloro-m-xylene (34-128) (DCBP) = Decachlorobiphenyl (39-132)

- # Column to be used to flag recovery values
- \* Values outside of required QC limits
- D Surrogate Compound diluted out

Page 1 for CK85

FORM-II PCB

CESS 00-21467 to 00-21480

## Chain of Custody Record & Laboratory Analysis Request

Page \_\_\_ of \_\_\_

Turn Around Requested: Steland Zuik

Analytical Resources, Incorporated Analytical Chemists and Consultants 400 Ninth Avenue North Seattle, WA 98109-4708 206-621-6490 206-621-7523 (fax)

Report to: John HcGilfon		i N37 G	with the	Jow wal				Ала	yses	Reque	sted			Notes/Comments
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NBF-S/43-COURS-C		9:35			X									,
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MBF-SP45-00/109-A		10:35			17									
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November 29, 2000

Joan McGilton
The Boeing Company
Energy and Environmental Affairs
P.O. Box 3707, M/S 7A-XA
Seattle, WA 98124-2207

RE: Project: NBF Joint Compound ARI Job CK85

Dear Joan,

Please find enclosed the original Chain of Custody (COC) record and analytical results for the above referenced project. Fourteen solid samples were received in good condition on November 9, 2000.

Samples were analyzed for PCB Aroclors referencing EPA SW-846 method 8082. Extracts were cleaned up with sulfuric acid and elemental mercury to eliminate chromatographic interferences.

Samples NBF-SP41-001109-E and NBF-SP45-001109-A required extract dilution and reanalysis. Analysis of NBF-SP45-001109-A for showed a TCMX surrogate recovery outside QC limits. As the DCBP recovery was in control, no corrective action was required. Surrogate spikes were diluted out of the extract for sample NBF-SP39-001109-C1.

Quality control analysis results are included for your review. A copy of this report will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Stephanie Lucas

Client Services

SPL/sl Enclosures

cc: Kris Hendrickson, Landau, Edmonds
Stacy Pischer, Landau, Edmonds



Sample No: NBF-SP25-001108-B2

Lab Sample ID: CK71D QC Report No: CK71-Bosing Corporate SHEA LIMS ID: 00-21360

Project: NBF Concrete Joint Material

Date Received: 11/08/00 zed: (A) Matrix: Joint Compound

8-G4292-X690-7KX690-61241-61241

Data Release Authorized:

Reported: 11/27/00

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Date extracted: 11/15/00

CONSTITUENT	SAMPLE VALUE	SPIKE FOUND	added	% RECOVERY	RPD
MATRIX SPIKE					
Aroclor 1242 MATRIX SPIKE DUPLICATE	< 990	8080	10000	80.8%	
Aroclor 1242	< 990	7340	9800	74.9%	7.6%

Values Reported in Total ug/kg as received



Lab Sample ID: CK71 LIMS ID: 00-21357

Matrix: Joint Compound

QC Report No: CK71-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-61241-61241

Data Release Authorized:

Reported: 11/27/00

LABORATORY CONTROL SAMPLE SPIKE RECOVERY

Date extracted: 11/15/00

SPIKE SPIKE CONSTITUENT FOUND ADDED RECOVERY

LABORATORY CONTROL SAMPLE

Arcclor 1242

10100 10000

101%

Aroclor Surrogate Recoveries

Decachlorobiphenyl Tetrachlorometaxylene

106% 115%

Values Reported in Total ug/kg as received



#### Sample No: Method Blank

Lab Sample ID: CK71MB QC Report No: CK71-Boeing Corporate SHEA Project: NBF Concrete Joint Material LIMS ID: 00-21357

Matrix: Joint Compound 8-G4292-X690-7KX690-61241-61241

> Date Sampled: NA Date Received: NA

Data Release Authorized:

V21127/50 Reported: 11/27/00

Date extracted: 11/15/00 GPC Cleanup: No Date analyzed: 11/22/00 14:39 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes

Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte	anny o y y y y y ang	Bulsv	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12572-29-6	Aroclor	1248	1,000	Ũ
11097-69-1	Aroclor	1254	1,000	U
11096-82-5	Aroclor	1260	1,000	Ü
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	112%
Tetrachlorometaxvlene	121%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP34-001108-J

Lab Sample ID: CK71L

QC Report No: CK71-Boeing Corporate SHEA

LIMS ID: 00-21368

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X590-7KX690-61241-61241

Date Sampled: 11/08/00

Data Release Authorized: 11/08/00 Date Received: 11/08/00 Reported: 11/27/00 (A.)

Date extracted: 11/15/00

GPC Cleanup: No

Date analyzed: 11/24/00 21:33

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.00 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,100	
11096-82-5	Aroclor	1260	1,000	Ũ
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl Tetrachlorometaxylene 90.8%

#### Data Qualifiers

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- 3 Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- MVIndicates no value reportable - see additional analyses. Indicates a raised reporting limit due to matrix interferences.

The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP33-001108-G

Lab Sample ID: CK71K QC Report No: CK71-Boeing Corporate SHEA LIMS ID: 00-21367 Project: NBF Concrete Joint Material Matrix: Joint Compound

8-G4292-X590-7KX690-51241-51241

Lace Sampled: 11/08/00 Date Received: 11/08/00 Reported: 11/27/00 Living

Date extracted: 11/15/00 GPC Cleanup: No Florisil Cleanup: No Date analyzed: 11/25/00 00:52 Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.04 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1000

#### Reported in Total ug/kg as received

	Value		Analyte	CAS Number
Ü	980.000	1016	Arocler	12674-11-2
U	980,000	1242	Aroclor	53469-21-9
Ũ	980,000	1248	Aroclor	12672-29-6
	31,000,000	1254	Aroclor	11097-69-1
	19,000,000	1260	Aroclor	11096-82-5
U	2,000,000	1221	Aroclor	11104-28-2
U	980.000	1232	Aracler	11141-16-5

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	D
Tetrachlorometaxylene	D

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. 78 Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- 17 Indicates compound was analyzed for, but not detected at the given detection limit.
- 8 Found in associated method blank
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP32-001108-B

Lab Sample ID: CK71J

QC Report No: CK71-Boeing Corporate SHEA

LIMS ID: 00-21366

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7KX690-61241-51241

Date Sampled: 11/08/00

Data Release Authorized:

Reported: 11/27/00

ed: 11/08/00 EX N/N/D Date Received: 11/08/00

Date extracted: 11/15/00

GPC Cleanup: No

Date analyzed: 11/25/00 08:36

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.01 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Number	Analyte	(9).(44.90).45.(10).15.(10).	Value	
12674-11-2	Aroclor	1016	1,000	Ü
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,000	U
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	IJ

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl Tetrachlorometaxylene 90.8%

95.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP31-001108-C

Lab Sample ID: CK71I QC Report No: CK71-Boeing Corporate SHEA Project: NBF Concrete Joint Material LIMS ID: 00-21365 Matrix: Joint Compound

8-G4292-X690-7KX690-61241-61241

ed: 11/08/00 Date Received: 11/08/00 Date Sampled: 11/08/00 Data Release Authorized:

Reported: 11/27/00

Date extracted: 11/15/00 GPC Cleanup: No Date analyzed: 11/24/00 20:26 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.03 q-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyta	ند شده المناطقة المن	Value	
12674-11-2	Aroclor	1016	980	Ű
53469-21-9	Aroclor	1242	980	U
12672-29-6	Aroclor	1248	980	Ű
11097-69-1	Aroclor	1254	1,300	
11096-82-5	Aroclor	1260	980	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 91.2% Tetrachlorometaxylene 102%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. (d) Dilution Required
- Indicates no value reported due to saturation of the detector. S
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- 8 Found in associated method blank
- NA. Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP30-001108-G

Lab Sample ID: CK71H

QC Report No: CK71-Boeing Corporate SHEA

LIMS ID: 00-21364

Project: NBF Concrete Joint Material

Matrix: Joint Compound

Date extracted: 11/15/00

Final Ext Vol: 20 mL

Instrument ID: ECD1

Date analyzed: 11/24/00 20:59

Sample Amount: 2.02 g-as-rec

8-G4292-X690-7KX690-61241-61241

Date Sampled: 11/08/00

Data Release Authorized:

Date Received: 11/08/00

Reported: 11/27/00 (M/11/27/00

GPC Cleanup: No

Florisil Cleanup: No

Acid Cleanup: Yes

Sulfur Cleanup: No

Conc/Dilution Factor: 1:1000

Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	990,000	U
53469-21-9	Aroclor	1242	990,000	Ũ
12672-29-6	Aroclor	1248	990,000	U
11097-69-1	Aroclor	1254	25,000,000	
11096-82-5	Aroclor	1260	9,300,000	
11104-28-2	Aroclor	1221	2,000,000	Ũ
11141-16-5	Aroclor	1232	990,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	D
Tetrachlorometaxylene	D

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- Indicates compound was not analyzed. NA
- Indicates no recovery due to interferences.
- MV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP29-001108-D

Lab Sample ID: CK71G QC Report No: CK71-Boeing Corporate SHEA LIMS ID: 00-21363 Project: NBF Concrete Joint Material

Matrix: Joint Compound 8-G4292-X690-7KX690-61241-51241

Date Sampled: 11/08/00

Data Release Authorized: NEO Date Received: 11/08/00

Reported: 11/27/00 PLNANCO

Date extracted: 11/15/00 GPC Cleanup: No
Date analyzed: 11/25/00 09:42 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.02 g-as-rec Sulfur Cleanup: No
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Nu	mber	Analyte	روز وروز وروز ورستان و منافع و وروز و و در المنافع و	Value	
12674-	11-2	Aroclor	1016	990	U
53469-	21-9	Aroclor	1242	990	U
12672-	29-6	Aroclor	1248	990	U
11097-	69-1	Aroclor	1254	1,100	
11096~	82-5	Aroclor	1260	990	U
11104-	28-2	Aroclor	1221	2,000	U
11141-	16-5	Aroclor	1232	990	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 92.8% Tetrachlorometaxylene 87.2%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP28-001108-H

Lab Sample ID: CK71F LIMS ID: 00-21362 QC Report No: CK71-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7KX690-61241-61241

Date Sampled: 11/08/00

Data Release Authorized:

Date Received: 11/08/00

Reported: 11/27/00 W

Date extracted: 11/15/00 GPC Cleanup: No

Date analyzed: 11/25/00 07:30 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes

Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte	an kanninkan na makan nganggapaggapaggi telah kilakakan ana kikakan pangang		
12674-11-2	Aroclor	1016	1,000 Ŭ	
53469-21-9	Aroclor	1242	1,000 U	
12672-29-6	Aroclor	1248	1,000 U	
11097-69-1	Aroclor	1254	540 J	
11096-82-5	Aroclor	1260	1,000 U	
11104-28-2	Aroclor	1221	2, <b>0</b> 00 U	
11141-16-5	Aroclor	1232	1,000 U	

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 88.2% Tetrachlorometaxylene 73.0%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP27-001108-B2

Lab Sample ID: CK71E QC Report No: CK71-Boeing Corporate SHEA LIMS ID: 00-21361 Project: NBF Concrete Joint Material

Matrix: Joint Compound 8-G4292-X690-7KX690-61241-61241

Date Sampled: 11/08/00
Release Authorized: 11/08/00
Date Received: 11/08/00

Date extracted: 11/15/00 GPC Cleanup: No Date analyzed: 11/25/00 04:11 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.04 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS I	Nunber	Analyte	ende 1800 in venden in die de landstood and 1800 van de de landstood van die de landstood van de landstood van	Value	
1257	4-11-2	Aroclor	1016	980	U
5346	9-21-9	Aroclor	1242	980	U
1267	2-29-6	Aroclor	1248	980	U
1109	7-69-1	Aroclor	1254	980	U
1109	5-82-5	Aroclor	1260	980	U
1110	4-28-2	Aroclor	1221	2,000	U
1114	1-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 82.2% Tetrachlorometaxylene 74.0%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP26-001108-B2 SPIKE DUPLICATE

Lab Sample ID: CK71DMSD QC Report No: CK71-Boeing Corporate SHEA

LIMS ID: 00-21360 Project: NBF Concrete Joint Material Matrix: Joint Compound

8-G4292-X690-7KX690-61241-61241

Date Sampled: 11/08/00

Data Release Authorized: 100 Date Received: 11/08/00

Reported: 11/27/00 ()

Date extracted: 11/15/00

Date analyzed: 11/25/00 03:38 Instrument ID: ECD1

Sample Amount: 2.04 g-as-rec Final Ext Vol: 20 mL

GPC Cleanup: No

Florisil Cleanup: No Acid Cleanup: Yes Sulfur Cleanup: No

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte	oo Tooloo Waxaa ka waxaa ka waxaa ka k	Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242		
12672-29-6	Aroclor	1248	980	U
11097-69-1	Aroclor	1254	980	U
.11096-82-5	Aroclor	1260	980	U
11104-28-2	Aroclor	1221	2,000	Ŭ
11141-16-5	Aroclor	1232	980	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 83.0% Tetrachlorometaxylene 79.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP26-001108-B2

MATRIX SPIKE

Lab Sample ID: CK71DMS QC Report No: CK71-Boeing Corporate SHEA LIMS ID: 00-21360

Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-61241-61241

ed: 11/08/00 Pate Received: 11/08/00

Data Release Authorized:

Matrix: Joint Compound

Reported: 11/27/00

Date extracted: 11/15/00 Date analyzed: 11/25/00 03:04

Instrument ID: ECD1 Sample Amount: 2.00 g-as-rec Final Ext Vol: 20 mL

GPC Cleanup: No Florisil Cleanup: No Acid Cleanup: Yes Sulfur Cleanup: No Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value
12674-11-2	Aroclor	1016	1,000 U
53469-21-9	Aroclor	1242	No man was
12672-29-6	Aroclor	1248	1,000 U
11097-69-1	Aroclor	1254	1,000 U
11096-82-5	Aroclor	1260	1,000 U
11104-28-2	Aroclor	1221	2,000 U
11141-16-5	Aroclor	1232	1,000 U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 90.0% Tetrachlorometaxylene 86.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP26-001108-B2

Lab Sample ID: CK71D

QC Report No: CK71-Boeing Corporate SHEA

LIMS ID: 00-21360

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7KX690-61241-61241

Date Sampled: 11/08/00

Date Received: 11/08/00

Reported: 11/27/00 CR

GPC Cleanup: No

Date extracted: 11/15/00 Date analyzed: 11/25/00 02:31

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.03 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

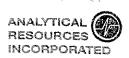
#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
·				
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242	980	Ũ
12672-29-6	Aroclor	1248	980	U
11097-69-1	Aroclor	1254	980	U
11096-82-5	Aroclor	1260	980	Ü
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	86.0%
Tetrachlorometaxylene	81.8%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- Indicates compound was not analyzed. MA
- Indicates no recovery due to interferences.
- MVIndicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP25-001108-B

QC Report No: CK71-Boeing Corporate SHEA Lab Sample ID: CK71C LIMS ID: 00-21359 Matrix: Joint Compound

Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-61241-61241

Date Sampled: 11/08/00 Data Release Authorized: Date Received: 11/03/00

Reported: 11/27/00 (4)

Date extracted: 11/15/00

GPC Cleanup: No Date analyzed: 11/25/00 01:25 Florisil Cleanup: No Acid Cleanup: Yes

Instrument ID: ECD1 Sample Amount: 2.01 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS	3 Number	Analyte		Value	
126	574-11-2	Aroclor	1016	1,000	U
534	169-21-9	Aroclor	1242	1,000	U
126	572-29-6	Aroclor	1248	1,000	U
11(	397-69-1	Aroclor	1254	4,300	
11(	096-82-5	Aroclor	1260	1,000	Ű
11:	L04-28-2	Aroclor	1221	2,000	U
11	141-16-5	Aroclor	1232	1,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 74.2% Tetrachlorometaxylene 69.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP24-001108-31

Lab Sample ID: CK71B LIMS ID: 00-21358 QC Report No: CK71-Boeing Corporate SHEA Project: NBF Concrete Joint Material

Matrix: Joint Compound

Date extracted: 11/15/00

8-G4292-X690-7KX690-61241-61241

m

Date analyzed: 11/24/00 10:19

Date Sampled: 11/08/00 Date Received: 11/08/00

Data Release Authorized:
Reported: 11/27/00 Chi

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GPC Cleanup: No

Florisil Cleanup: No

Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.02 g-as-rec Sulfur Cleanup: No
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	990	U
53469-21-9	Aroclor	1242	990	U
12672-29-6	Arcclor	1248	990	U
11097-69-1	Aroclor	1254	1,200	
11096-82-5	Arcclor	1260	990	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	990	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 86.2% Tetrachlorometaxylene 78.5%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.

  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP23-001108-I

Lab Sample ID: CK71A LIMS ID: 00-21357 Matrix: Joint Compound QC Report No: CK71-Boeing Corporate SHEA Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-61241-61241

Data Release Authorized:

Date Sampled: 11/08/00
Date Received: 11/08/00

Reported: 11/27/00 K. ....

Date extracted: 11/15/00 GPC Cleanup: No
Date analyzed: 11/24/00 09:12 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.02 g-as-rec Sulfur Cleanup: No
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	990	U
53469-21-9	Aroclor	1242	990	U
12672-29-6	Aroclor	1248	990	U
11097-69-1	Aroclor	1254	1,200	
11096-82-5	Aroclor	1260	990	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	990	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 101% Tetrachlorometaxylene 93.2%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



#### SOIL AROCLOR SURROGATE SUMMARY

Matrix: Joint Compound

QC Report No: CK71

Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-61241-61241

TIMS ID	ID Lab ID Client ID		TOVX #	DCBP #	TOT OUT
		•			
00-21357MB	111500MB	Method Blank	121%	112%	0
00-21357SB	111500SB	Lab Control	116%	106%	0
00-21357	CK71A	NBF-SP23-001108-I	93.2%	101%	0
00-21358	CK71B	NBF-SP24-001108-B1	78.5%	86.2%	0
00-21359	CK71C	NBF-SP25-001108-B	69.2%	74.2%	0
00-21360	CK71D	NBF-SP26-001108-B2	81.8%	86.0%	0
00-21360MS	CK71D	NBF-SP26-001108-B2-MS	86.5%	90.0%	0
00-21360MSD	CK71D	NBF-SP26-001108-B2-MSD	79.2%	83.0%	0
00-21361	CK71E	NBF-SP27-001108-B2	74.0%	82.2%	0
00-21362	CK71F	NBF-SP28-001108-H	73.0%	88.2%	٥
00-21363	CK71G	NBF-SP29-001108-D	87.2%	92.8%	0
00-21364	CK71H	NBF-SP30-001108-G	D	D	O
00-21365	CK71I	NBF-SP31-001108-C	102%	91.2%	0
00-21366	CK71J	NBF-SP32-001108-B	95.2%	90.8%	0
00-21367	CK71K	NBF-SP33-001108-G	D	D	0
00-21368	CK71L	NBF-SP34-001108-J	90.8%	91.8%	0

#### QC LIMITS

(TCMX) = Tetrachloro-m-xylene (34-128) (DCBP) = Decachlorobiphenyl (39-132)

- # Column to be used to flag recovery values
- Values outside of required QC limits
- D Surrogate Compound diluted out

Page i for CK71

FORM-II PCB

# Chain of Custody Record & Laboratory Analysis Request

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Analytical Resources, incorporated Analytical Chemists and Consultants 400 Ninth Avenue North Seattle, WA 98109-4708 206-621-7523 (fee)

Page of / r O		Turn Ar	ound Re	quested:	Your	lovel	Zwi	K		20	6-621	6490	206-621-7523 (fax)
Report to: Jan McGillon	Proj Nam	e: <i>NBFC</i> ber:	ncreti	<u> </u>	B		Ana	alyses	Reques	ted	<del></del>		Notes/Comments
	Proj Num	ber:		Makinak	1 2	and the same of th	,						g visamento.
Company: Boeing Address: 2-0, But 37° 7 Address: 2-0+15, WA 99/24	Sampler:	Jennis	Er Pars	~S	by GPA Modual Stock	aly (Operatory of pages)	ATTENDED CONCESSION		and or the state of the state o	SILENCE DESCRIPTION			**************************************
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Phone: 425-865-4459	Shipping	Method:			18	STATE OF STA	A CONTRACTOR OF THE CONTRACTOR		***************************************			***************************************	(VP#HIRITA-C-C-AN)
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NBF-SP25-00/108-B		1:15			M								
NBF-3/26-00/108-BZ		713c		3	<u> </u>			<u> </u>					M5/MSD
NBF-3827-00//08-B2		10:10		1			1						
NBF-5828-00108-H		10:45			X								
NBF-5229-501/08-0		11:15			X							***************************************	
NBF-SP30-001108-G		1/:38			Х		ATT COLUMN						
NBF-5P31-001108-C		12:05		1	Х	No.							
NBF-5032-00/108-B		13:05		/	×								
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November 27, 2000

Joan McGilton
The Boeing Company
Energy and Environmental Affairs
P.O. Box 3707, M/S 7A-XA
Seattle, WA 98124-2207

RE: Project: NBF Joint Compound ARI Job CK71

Dear Joan,

Please find enclosed the original Chain of Custody (COC) record and analytical results for the above referenced project. Twelve solid samples were received in good condition on November 8, 2000.

Samples were analyzed for PCB Aroclors referencing EPA SW-846 method 8082. Extracts were cleaned up with sulfuric acid and elemental mercury to eliminate chromatographic interferences.

Samples NBF-SP30-001108-G and NBF-SP33-001108-G required extract dilution and reanalysis. Surrogate spikes were diluted out of the extract.

Quality control analysis results are included for your review. A copy of this report will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

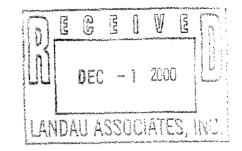
Sincerely,

ANALYTICAL RESOURCES, INC.

Stephanie Lucas Client Services

SPL/sl Enclosures

cc: Kris Hendrickson, Landau, Edmonds





Sample No: NBF-SP18-001107-J

Lab Sample ID: CK70K

QC Report No: CK70-Boeing Corporate SHEA

LIMS ID: 00-21351

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X590-7KX590-G1241-G1241

Date Received: 11/07/00

Data Release Authorized:

Reported: 11/27/00 06/1/27/00

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Date extracted: 11/13/00

CONSTITUENT	-	LUE	SPIKE	SPIKE ADDED	% RECOVERY	RPD
MATRIX SPIKE						
Aroclor 1242 MATRIX SPIKE DUPLICATE	<	990	7280	9950	73.2%	
Aroclor 1242	<	990	7340	9950	73.8%	0.9%

Values Reported in Total ug/kg as received



Lab Sample ID: CK70

QC Report No: CK70-Boeing Corporate SHEA

LIMS ID: 00-21341

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7KX690-G1241-G1241

106%

109%

Data Release Authorized:

Reported: 11/27/00 04.127100

LABORATORY CONTROL SAMPLE SPIKE RECOVERY

Date extracted: 11/13/00

SPIKE SPIKE CONSTITUENT FOUND ADDED RECOVERY LABORATORY CONTROL SAMPLE Aroclor 1242 971.0 10000 97.1%

# Aroclor Surrogate Recoveries

Decachlorobiphenyl Tetrachlorometaxylene

Values Reported in Total ug/kg as received



Sample No: NBF-SP22-001107-H

Lab Sample ID: CK700

QC Report No: CK70-Boeing Corporate SHEA

LIMS ID: 00-21355

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7KX690-G1241-G1241

Date Sampled: 11/07/00

Data Release Authorized:

Reported: 11/27/00 04 11/20

Date Received: 11/07/00

Date extracted: 11/13/00 Date analyzed: 11/22/00 16:52

GPC Cleanup: No Florisil Cleanup: No Acid Cleanup: Yes

Instrument ID: ECD1 Sample Amount: 2.01 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyta		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	Ū
11097-69-1	Aroclor	1254	7,700	
11096-82-5	Aroclor	1260	3,900	
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	80.8%
Tetrachlorometaxylene	69.8%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. 10 Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NVIndicates no value reportable - see additional analyses.
- 100 Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP21-001107-D

Lab Sample ID: CK70N LIMS ID: 00-21354 Matrix: Joint Compound QC Report No: CK70-Boeing Corporate SHEA Project: NBF Concrete Joint Material

8-G4292-X690-7KX690-G1241-G1241

Date Sampled: 11/07/00

Data Release Authorized:

Date Received: 11/07/00

Reported: 11/27/00

Date extracted: 11/13/00 GPC Cleanup: No Date analyzed: 11/22/00 15:46 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.02 g-as-red Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	990	Ü
53469-21-9	Aroclor	1242	990	U
12572-29-6	Aroclor	1248	990	Ü
11097-69-1	Aroclor	1254	770	2.5
11096-82-5	Aroclor	1260	990	Ũ
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Aroclor	1232	990	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 93.5% Tetrachlorometaxylene 81.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: MBF-SP20-001107-G

Lab Sample ID: CK70M

QC Report No: CK70-Boeing Corporate SHEA

LIMS ID: 00-21353

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7KX690-G1241-G1241

Date Sampled: 11/07/00

Data Release Authorized:

Date Received: 11/07/00

Reported: 11/27/00 1/2/1/27/100

GPC Cleanup: No

Date extracted: 11/13/00 Date analyzed: 11/21/00 20:58

Florisil Cleanup: No

Acid Cleanup: Yes

Instrument ID: ECD1

Sulfur Cleanup: No

Sample Amount: 2.04 g-as-rec

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	980	Ŭ
53469-21-9	Aroclor	1242	980	Ū
12672-29-6	Aroclor	1248	980	U
11097-69-1	Aroclor	1254	5,100	
11096-82-5	Aroclor	1260	. 980	Ū
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	105%
Tetrachlorometaxylene	116%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.  $\mathbb{D}$
- IJ Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- Indicates compound was not analyzed. NA
- MR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP19-001107-I

Lab Sample ID: CK70L LIMS ID: 00-21352

Matrix: Joint Compound

QC Report No: CK70-Boeing Corporate SHEA
Project: NBF Concrete Joint Material

roject: NBF Concrete Joint Material 8-G4292-X690-7KX690-G1241-G1241

Date Sampled: 11/07/00

Data Release Authorized: Date Received: 11/07/00

Reported: 11/27/00 WL 11/27/00

Date extracted: 11/13/00 GPC Cleanup: No
Date analyzed: 11/22/00 03:36 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.02 g-as-rec Sulfur Cleanup: No
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS Number	Analyte	indon, a frieddin, ac agoldwir dawl dd Callada ac agonill ach a mei anni, ar Chlomillad ag air.	Value	
12674-11-2	Aroclor	1016	990	Ű
53469-21-9	Aroclor	1242	990	U
12672-29-6	Aroclor	1248	990	U
11097-69-1	Aroclor	1254	990	U
11096-82-5	Aroclor	1260	990	U
11104-28-2	Aroclor	1221	2,000	Ũ
11141-16-5	Aroclor	1232	990	U

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 93.2% Tetrachlorometaxylene 78.0%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP18-001107-J SPIKE DUPLICATE

Lab Sample ID: CK70KMSD

QC Report No: CK70-Boeing Corporate SHEA

LIMS ID: 00-21351

Project: NBF Concrete Joint Material

Matrix: Joint Compound

ed: 11/07/00 Date Received: 11/07/00

8-G4292-X690-7XX690-G1241-G1241

Data Release Authorized:

Reported: 11/27/00

GPC Cleanup: No

Date extracted: 11/13/00 Date analyzed: 11/22/00 03:03

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.01 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

Analyte		Value	
Aroclor	1016	1,000	U
Aroclor	1242		
Aroclor	1248	1,000	U
Aroclor	1254	1,000	U
Aroclor	1260	1,000	U
Aroclor	1221	2,000	U
Aroclor	1232	1,000	U
	Aroclor Aroclor Aroclor Aroclor Aroclor	Analyte  Aroclor 1016 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Aroclor 1221 Aroclor 1232	Aroclor 1016 1,000 Aroclor 1242

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 86.2% Tetrachlorometaxylene 78.0%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the 11 given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP18-001107-J

MATRIX SPIKE

Lab Sample ID: CK70KMS QC Report No: CK70-Boeing Corporate SHEA LIMS ID: 00-21351 Project: NBF Concrete Joint Material

Matrix: Joint Compound 8-G4292-X690-7KX690-G1241-G1241

Date Sampled: 11/07/00

CA11121100 Data Release Authorized: Date Received: 11/07/00

Reported: 11/27/00

Date extracted: 11/13/00 GPC Cleanup: No Date analyzed: 11/22/00 02:30 Florisil Cleanup: No

Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.01 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS Number	Analyte		<u> Value</u>	
12674-11-2	Aroclor	1016	1,000	Ũ
53469-21-9	Aroclor	1242	· .	
12672-29-5	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,000	U
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 87.2% Tetrachlorometaxylene 76.8%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- MV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP18-001107-J

Lab Sample ID: CK70K

QC Report No: CK70-Boeing Corporate SHEA

LIMS ID: 00-21351

Project: NBF Concrete Joint Material

Matrix: Joint Compound

8-G4292-X690-7KX690-G1241-G1241

Date extracted: 11/13/00

Reported: 11/27/00 UKWA Date Received: 11/07/00

GPC Cleanup: No

Florisil Cleanup: No

Date analyzed: 11/21/00 20:25 Instrument ID: ECD1

Acid Cleanup: Yes

Sulfur Cleanup: No

Sample Amount: 2.02 g-as-rec

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	990	U
53469-21-9	Aroclor	1242	990	U
12672-29-6	Aroclor	1248	990	Ü
11097-69-1	Aroclor	1254	990	U
11096-82-5	Aroclor	1260	990	Ű
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	990	Ũ

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	90.8%
Tetrachlorometaxylene	87.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. K Dilution Required
- 8 Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- 17 Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: MBF-SP44-001109-B1
SPIKE DUPLICATE

Lab Sample ID: CK85JMSD QC Report No: CK85-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Matrix: Solid

LIMS ID: 00-21476

Date Sampled: 11/09/00

Data Release Authorized: 🔥 🗘 Date Received: 11/09/00

Reported: 11/28/00 CRAN

Date extracted: 11/16/00 GPC Cleanup: No
Date analyzed: 11/25/00 23:31 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.03 g-as-rec Sulfur Cleanup: No
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Number	Analyta		Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242		
12672-29-6	Aroclor	1248	980	Ü
11097-69-1	Aroclor	1254	980	U
11096-82-5	Aroclor	1260	980	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	980	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 93.8% Tetrachlorometaxylene 91.2%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP45-001109-A

Lab Sample ID: CK85K. LIMS ID: 00-21477

QC Report No: CK85-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00

Data Release Authorized: Date Received: 11/09/00

Reported: 11/28/00 ()

Date extracted: 11/16/00 GPC Cleanup: No Date analyzed: 11/27/00 17:15 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:5

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
		•		
12674-11-2	Aroclor	1016	5,000	U
53469-21-9	Aroclor	1242	5,000	U
12672-29-6	Aroclor	1248	5,000	Ü
11097-69-1	Aroclor	1254	5,000	U
11096-82-5	Aroclor	1260	8,500	Y
11104-28-2	Aroclor	1221	10,000	U
11141-16-5	Aroclor	1232	5,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 109% Tetrachlorometaxylene NR

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- Indicates compound was not analyzed,
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NEF-SP46-001109-H

Lab Sample ID: CK85L

QC Report No: CK85-Boeing Corporate SHEA LIMS ID: 00-21478 Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00 Data Release Authorized: Date Received: 11/09/00

Reported: 11/28/00 NON

Date extracted: 11/16/00 GPC Cleanup: No Date analyzed: 11/26/00 02:50 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.03 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242	980	U
12672-29-6	Aroclor	1248	980	U
11097-69-1	Aroclor	1254	980	U
11096-82-5	Aroclor	1260	980	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 88.5% Tetrachlorometaxylene 91.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required.
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank 8
- Indicates compound was not analyzed.
- NIR Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses. NV
- Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP47-001109-H

Lab Sample ID: CK85M LIMS ID: 00-21479

QC Report No: CK85-Boeing Corporate SHEA Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00 Date Received: 11/09/00

Data Release Authorized: Reported: 11/28/00

Date extracted: 11/16/00

GPC Cleanup: No Date analyzed: 11/26/00 03:24 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.03 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte	Auda musika di Salah (Salah	Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242	980	U
12672-29-6	Aroclor	1248	980	Ü
11097-69-1	Aroclor	1254	2,200	
11096-82-5	Aroclor	1260	1,700	
11104-28-2	Aroclor	1221	2,000	Ŭ
11141-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogate Recovery

80.5% Decachlorobiphenyl Tetrachlorometaxylene 85.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP48-001109-H

Lab Sample ID: CK85N

QC Report No: CK85-Boeing Corporate SHEA

LIMS ID: 00-21480

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: 11/09/00

UK 1125100 Data Release Authorized:

Date Received: 11/09/00

Reported: 11/28/00

Date extracted: 11/16/00 Date analyzed: 11/26/00 06:09

GFC Cleanup: No Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.03 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

# Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242	980	U
12672-29-6	Aroclor	1248	980	U
11097-69-1	Aroclor	1254	980	U
11096-82-5	Aroclor	1260	980	Ü
11104-28-2	Aroclor	1221	2,000	υ
11141-15-5	Aroclor	1232	980	Ü

# PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	81,5%
Tetrachlorometaxylene	94.8%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector. S
- Indicates the surrogate was diluted out.
- 77 Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: Method Blank

Lab Sample ID: CK85MB

QC Report No: CK85-Boeing Corporate SHEA

LIMS ID: 00-21467

Project: NBF Concrete Joint Material

Matrix: Solid

Date Sampled: NA

Reported: 11/28/00 (10"/25/0)

Date Received: NA

GPC Cleanup: No

Date extracted: 11/15/00 Date analyzed: 11/25/00 13:34

Florisil Cleanup: No

Instrument ID: ECD1 Sample Amount: 2.00 g-as-rec

Acid Cleanup: Yes Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	Ű
53469-21-9	Aroclor	1242	1,000	Ű
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,000	Ü
11096-82-5	Aroclor	1260	1,000	Ŭ
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	108%
Tetrachlorometaxvlene	116%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detactor.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- Indicates compound was not analyzed.
- MR Indicates no recovery due to interferences.
- MV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Lab Sample ID: CK85 LIMS ID: 00-21467

0-21467

Matrix: Solid

Aroclor 1242

Data Release Authorized: 2010 Reported: 11/28/00

LABORATORY CONTROL SAMPLE SPIKE RECOVERY

Date extracted: 11/16/00

CONSTITUENT SPIKE %
FOUND ADDED RECOVERY

LABORATORY CONTROL SAMPLE

# Aroclor Surrogate Recoveries

10000

101%

QC Report No: CK85-Boeing Corporate SHEA

Project: NBF Concrete Joint Material

Decachlorobiphenyl 109% Tetrachlorometaxylene 117%

10100

Values Reported in Total ug/kg as received

# ANALYTICAL ( RESOURCES 1 INCORPORATED

# ORGANICS ANALYSIS DATA SHEET PCB by GC/ECD

Sample No: NBF-SP44-001109-B1

Lab Sample ID: CK85J

QC Report No: CK85-Boeing Corporate SHEA

LIMS ID: 00-21476

Project: NBF Concrete Joint Material

Matrix: Solid

Date Received: 11/09/00

Data Release Authorized: 11/28/00 NO. 11/28/00

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Date extracted: 11/16/00

CONSTITUENT		PLR	SPIKE FOUND	SPIKE	RE	\$ SCOVERY	RPD
MATRIX SPIKE							
Aroclor 1242 MATRIX SPIKE DUPLICATE	<	990	8900	10900	8\$	).0%	
Aroclor 1242	«	990	8330	9850	84	1.5%	5.2%

Values Reported in Total ug/kg as received

April 13, 2001

Joan McGilton
The Boeing Company
Energy and Environmental Affairs
P.O. Box 3707, M/S 7A-XA
Seattle, WA 98124-2207

RE: Project: NBF Joint Compound ARI Job CX87

Dear Joan,

Please find enclosed the original Chain of Custody (COC) record and analytical results for the above referenced project. Thirteen solid samples were received in good condition on April 2, 2001.

Samples were analyzed for PCB Aroclors referencing EPA SW-846 method 8082. Extracts were cleaned up with sulfuric acid to eliminate chromatographic interferences.

Samples NBF-SP57-010402-G, NBF-SP58-010402-G, NBF-SP59-010402-RES.G, and NBF-SP61-010402-RES.G for the PCB analysis required dilution and re-analysis to quantitate aroclors 1254 and 1260 within the linear range of the GC/ECD instrument.

No other analytical complications were noted. Quality control analysis results are included for your review. A copy of this report will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

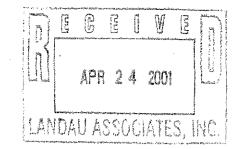
Stephanie Lucas

Project Manager (206) 389-6154

steph@arilabs.com

SPL/sl Enclosures

cc: Kris Hendrickson, Landau, Edmonds

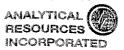


130 2nd Avenue S. Edmonds, WA 98020 Phone (425) 778-0907 Fax (425) 778-6409

Chain-of-Custody Record Please

Please CC hand copy resultinto

	Client Tro. A	(cGilhai Mozth B	- The Bee	Job No. <u>Oz</u> ingCompany eld-Scattle, h				Gr.	Test	ting P	arame	eters	DJoan McGillon The Boeing Gruphy MC 7 A-W1 P.O. Box 3704 Seattle, WA 981 BKristhandrickson	Anne H	elvers dav oc
	Sampler's Name Sample No.	Date	Time	Location	No. of Containe	/ms	)p)//		//	/			Claudan Assoc, 130 2nd Ave. S, Edmond 5, WA 1302 Observations/Comments	Target R	gorth
NYF- NBF-	5/50-010400 SP51-010400	<sub>H</sub> 412/01 K 412/01	08:20	N. of 3-322 S. of 3-322 E. of 3-324 Whatternel 3-368											7704
NBF NBF NBF	5/53-010402 5/54-010402 -3/55-01040	2-ff 4/40 -A 440f 2-A 412f	09:55 10:25 10:45	Eofswerpordung 401/2000 N 5-320 NATO-5-3-380	0 /	X									
NDF JÖF- UBF	-SP56-010903 SP57-010903 -SP58-010492	1-A 4/2/01 -6 4/2/01 -6 4/2/0	11:20	NY3-200 E. of 3-350	1	XXXXXX									
)BF-	5960-010402	Res, H 4/1	WI 14:3	5 stalls A-1, A-2 05 talk A-1, A-2	7 /							400000000000000000000000000000000000000			
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# SOIL AROCLOR SURROGATE SUMMARY

Matrix: Joint Compound

QC Report No: CX87

Project: NBF Joint Material

025082.63

LIMS ID	Lab ID	Client ID	TOEL #	DCBP #	TOT OUT
01-4775MB	040401MB	Method Blank	103%	87.5%	0
01-4775SB	040401SB	Lab Control	103%	88,8%	Ũ
01-4775	CX87A	NBF-SP49-010402-H	67.5%	97.5%	0
01-4776	CX873	NBF-SP50-010402-H	55.5%	77.23	0
01-4777	CX87C	NBF-SP51-010402-K	59.2%	47.5%	0
01-4778	CX87D	NBF-SP52-010402-K	85.0%	69.0%	0
01-4778MS	CX87D	NBF-SP52-010402-K-MS	75.0%	60.5%	0
01-4778MSD	CX87D	NBF-SP52-010402-K-MSD	78.2%	61.8%	0
01-4779	CX87E	NBF-SP53-010402-H	67.8%	62.5%	Q
01-4780	CX87F	NBF-SP54-010402-A	62.0%	68.2%	0
01-4781	CX87G	NBF-SP55-010402-A	53.8%	62.5%	0
01-4782	CX87H	NBF-SP56-010402-A	71.8%	63.0%	0
01-4783	CX87I	NBF-SP57-010402-G	D	D	0
01-4784	CX87J	NBF-SP58-010402-G	D	D	. 0
01-4785	CX87K	NBF-SP59-010402-RES.G	D	D	O
01-4786	CX87L	NBF-SP60-010402-RES.H	50.2%	84.0%	0
01-4787	CX87M	NBF-SP61-010402-RES.G	D	D	Ũ

		LCS/MB	LIMITS	QC	LIMITS
(ICMX) =	Tetrachloro-m-xylene	(45-	132)	(34	1-128}
(DCBP) =	Decachlorobiphenyl	(61-	122)	(3.9	)-132)

<sup>#</sup> Column to be used to flag recovery values

Page 1 for CX87

FORM-II PCB

Yalues outside of required QC limits

D Surrogate Compound diluted out

# ORGANICS ANALYSIS DATA SHEET

PCB by GC/ECD



Sample No: NBF-SP49-010402-H

Lab Sample ID: CX87A QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4775 Project: NBF Joint Material

Matrix: Joint Compound 025082.63

Date Sampled: 04/02/01

Data Release Authorized:4/7 Date Received: 04/02/01

Reported: 04/13/01 4/15/

Date extracted: 04/04/01 GFC Cleanup: No
Date analyzed: 04/11/01 08:31 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.03 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:10

pH: Comment Percent Moisture: \*\*\*\*

# Reported in Total ug/kg as received

CAS Number	Analyta		<u> Value</u>	
12674-11-2	Aroclor	1016	9,800	U
53469-21-9	Arcclor	1242	9,800	U
12672-29-6	Aroclor	1248	67,000	X
11097-69-1	Arocler	1254	270,000	
11096-82-5	Aroclor	1260	83,000	Ý
11104-28-2	Aroclor	1221	20,000	U
11141-16-5	Aroclor	1232	9,800	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 97.5% Tetrachlorometaxylene 67.5%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- WV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP50-010402-H

Lab Sample ID: CX878 QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4776 Project: NBF Joint Material

Matrix: Joint Compound 025082.63

Date Sampled: 04/02/01

Data Release Authorized: ( Date Received: 04/02/01

Date extracted: 04/04/01 GPC Cleanup: No Date analyzed: 04/11/01 23:39 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1.000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	7,100	
11097-69-1	Aroclor	1254	18,000	
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	Ü

#### PCB-Arcolor Surrogate Recovery

Decachlorobiphenyl	77.2%
Tetrachlorometaxylene	55.5%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- MV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP51-010402-K

Lab Sample ID: CX87C

QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4777

Project: NBF Joint Material

Matrix: Joint Compound

025082.63

Date Sampled: 04/02/01

Data Release Authorized://r

Date Received: 04/02/01

Reported: 04/13/01

Date extracted: 04/04/01

GPC Cleanup: No

Date analyzed: 04/12/01 00:55 Instrument ID: ECD1

Florisil Cleanup: No Acid Cleanup: Yes

Sample Amount: 2.00 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		. Value	
12674-11-2	Aroclor	1016	1,000	Ü
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	Ü
11097-69-1	Aroclor	1254	1,000	Ü
11096-82-5	Aroclor	1260	1,000	Ü
11104-28-2	Aroclor	1221	2,000	Ü
11141-15-5	Aroclor	1232	1,000	IJ

## PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	47.5%
Tetrachlorometaxylene	59.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out. n
- Indicates compound was analyzed for, but not detected at the given detection limit.
- 8 Found in associated method blank
- Indicates compound was not analyzed,
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: MBF-SP52-010402-K

Lab Sample ID: CX87D QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4778 Project: NBF Joint Material

Matrix: Joint Compound 025082.63

Date Sampled: 04/02/01

Data Release Authorized: [4] Date Received: 04/02/01

Reported: 04/13/01 4/15/1

Date extracted: 04/04/01 GPC Cleanup: No
Date analyzed: 04/12/01 04:44 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.01 g-as-rec Sulfur Cleanup: No
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	<u>Analyta</u>	$ y_{ij} = $	Value	
12674-11-2	Aroglor	1016	1,000	TT
53469-21-9	Aroclor		1,000	
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	510	
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	

#### PCB-Aroclor Surrogate Recovery

De	cachlorobiphenyl	69	. 0	ska ska
Ϋ́ε	etrachlorometaxvlene	35	. 0	3

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP53-010402-H

Lab Sample ID: CX87E QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4779 Project: NBF Joint Material

Matrix: Joint Compound 025082.63

Date Sampled: 04/02/01
Data Release Authorized: C# Date Received: 04/02/01

Reported: 04/13/01 4/11/4

Date extracted: 04/04/01 GPC Cleanup: No
Date analyzed: 04/12/01 07:17 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte	78 (	Value	
		· ·		
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	Ü
11097-69-1	Aroclor	1254	5,400	
11095-82-5	Aroclor	1260	3,600	
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Aroclor	1232	1.000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 62.5% Tetrachlorometaxylene 67.8%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP54-010402-A

Lab Sample ID: CX87F QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4780 Project: NBF Joint Material

Matrix: Joint Compound 025082.63

Date Sampled: 04/02/01

Data Release Authorized: [ Date Received: 04/02/01

Reported: 04/13/01 4/13/01

Date extracted: 04/04/01 GPC Cleanup: No Date analyzed: 04/12/01 08:33 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.01 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte	n (n an ann an a	Value	
12674-11-2	Aroclor	1016	1,000	Ű
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	780	Ĵ
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	68.2%
Tetrachlorometaxvlene	62.0%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- MV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP55-010402-A

Lab Sample ID: CX87G QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4781 Project: NBF Joint Material

Matrix: Joint Compound 025082.63

Date Sampled: 04/02/01

Data Release Authorized: ( Date Received: 04/02/01

Reported: 04/13/01 4//3/

Date extracted: 04/04/01 GPC Cleanup: No
Date analyzed: 04/12/01 12:22 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.03 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyta	MONOCOURS SAN NEW CONTRACTOR STORM AND	Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclox		980	-
12672-29-6	Aroclor	1248	980	Ü
11097-69-1	Aroclor	1254	980	U
11096-82-5	Aroclor	1260	980	Ü
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	980	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 62.5% Tetrachlorometaxylene 53.8%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- MR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP56-010402-A

Lab Sample ID: CX87H QC Report No: CX87-Boeing Corporate SHEA

Project: NBF Joint Material LIMS ID: 01-4782

Matrix: Joint Compound 025082.63

Date Sampled: 04/02/01 Data Release Authorized: (//-Date Received: 04/02/01

Reported: 04/13/01 4/11/01

Date extracted: 04/04/01 GPC Cleanup: No Date analyzed: 04/11/01 15:42 Florisil Cleanup: No

Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	Ü
11097-69-1	Aroclor	1254	14,000	
11096-82-5	Aroclor	1260	35,000	
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	U

# PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	63.0%
Tetrachlorometaxvlene	71 8%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. 1 Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- TT Indicates compound was analyzed for, but not detected at the given detection limit.
- В Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP57-010402-G

Lab Sample ID: CX87I QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4783 Project: NBF Joint Material

025082.63

Date Sampled: 04/02/01
Data Release Authorized: 04/02/01
Date Received: 04/02/01

Reported: 04/13/01 4/1/41

Matrix: Joint Compound

Date extracted: 04/04/01 GPC Cleanup: No Date analyzed: 04/12/01 20:26 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.02 g-as-rec Sulfur Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:100

# Reported in Total ug/kg as received

CAS Number Analyte	value = 0
12674-11-2 Aroclor 10	5 / 00 000 T
12674-11-2 Aroclor 10 53469-21-9 Aroclor 12	
12672-29-6 Aroclor 12	
11097-69-1 Aroclor 12	,
11096-82-5 Arcclor 12	w., ,
11104-28-2 Aroclor 12	• •
11141-16-5 Aroclor 12	

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl D
Tetrachlorometaxylene D

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.

  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP58-010402-G

Lab Sample ID: CX87J

QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4784

Project: NBF Joint Material

025082.63

Matrix: Joint Compound

Date Sampled: 04/02/01

Data Release Authorized: ( #

Reported: 04/13/01

Date Received: 04/02/01

Date extracted: 04/04/01

GPC Cleanup: No

Date analyzed: 04/12/01 21:23

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.00 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:500

Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	500,000	U
53469-21-9	Aroclor	1242	500,000	U
12672-29-6	Aroclor	1248	500,000	Ũ
11097-69-1	Aroclor	1254	19,000,000	
11096-82-5	Aroclor	1260	16,000,000	
11104-28-2	Aroclor	1221	1,000,000	
11141-16-5	Aroclor	1232	500,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	I
Tetrachlorometaxvlene	I

- Indicates an estimated value when that result is less than the calculated detection limit.
- Z Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector. 3
- Indicates the surrogate was diluted out. 0
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses. MV
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP59-010402-RBS.G

Lab Sample ID: CX87K QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4785 Project: NBF Joint Material

025082.63

Date Sampled: 04/02/01

Data Release Authorized:(/ Date Received: 04/02/01

Reported: 04/13/01 4/1/1

Matrix: Joint Compound

Date extracted: 04/04/01 GPC Cleanup: No Date analyzed: 04/12/01 22:19 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.04 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:500

#### Reported in Total ug/kg as received

CAS Number	Analyte	<del></del>	Value	
12674-11-2	Aroclor	TATE	490.000	77
53469-21-9	Aroclor		490.000	
12672-29-6	Aroclor		490,000	
11097-69-1	Aroclor	1254	6,000,000	
11096-82-5	Aroclor	1260	14,000,000	
11104-28-2	Aroclor	1221	980,000	U
11141-16-5	Aroclor	1232	490,000	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	D
Tetrachlorometaxylene	ם

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP60-010402-RES.H

Lab Sample ID: CX87L QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4786 Project: NBF Joint Material

025082.63

Date Sampled: 04/02/01 athorized: (// Date Received: 04/02/01

Data Release Authorized: (//

Reported: 04/13/01

Date extracted: 04/04/01

Matrix: Joint Compound

GPC Cleanup: No

Date analyzed: 04/11/01 21:44 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte	de to the construction of	ell sv	
12674-11-2	Aroclor	1016	1,000	Ü
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Arocler	1254	23,000	
11096-82-5	Aroclor	1260	19,000	
11104-28-2	Aroclor	1221	2,000	ũ
11141-16-5	Aroclor	1232	1,000	U

### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	84.0%
Tetrachlorometaxylene	50.2%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.

  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP61-010402-RES.G

Lab Sample ID: CX87M QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4787 Project: NBF Joint Material

025082.63

Date Sampled: 04/02/01

Data Release Authorized: ( // Date Received: 04/02/01

Reported: 04/13/01

Matrix: Joint Compound

Final Ext Vol: 20 mL

Date extracted: 04/04/01 GPC Cleanup: No Date analyzed: 04/12/01 23:16 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sulfur Cleanup: No Sample Amount: 2.04 g-as-rec Conc/Dilution Factor: 1:500

Reported in Total ug/kg as received

CAS Number	Analyte	**************************************	Value	
12674-11-2	Aroclor	1016	490,000	Ũ
53469-21-9	Aroclor	1242	490,000	U
12672-29-6	Aroclor	1248	490,000	Ü
11097-69-1	Aroclor	1254	5,900,000	
11096-82-5	Aroclor	1260	14,000,000	
11104-28-2	Aroclor	1221	980,000	U
11141-16-5	Aroclor	1232	490,000	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	D
Tetrachlorometaxvlene	D

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



#### Sample No: Method Blank

Lab Sample ID: CX87MB

QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4775

Project: NBF Joint Material

025082.63

Matrix: Joint Compound

Date Sampled: NA

Data Release Authorized: 4

Reported: 04/13/01

Date Received: NA

GPC Cleanup: No

Date analyzed: 04/11/01 07:25

Florisil Cleanup: No

Instrument ID: ECD1

Date extracted: 04/04/01

Acid Cleanup: Yes

Sample Amount: 2.00 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

pH: NA

Percent Moisture: NA

Reported in Total ug/kg as received

Analyta		Value	
Aroclor	1016	1,000	Ũ
Aroclor	1242	1,000	U
Aroclor	1248	1,000	U
Aroclor	1254	1,000	Ü
Aroclor	1260	1,000	U
Aroclor	1221	2,000	U
Aroclor	1232	1,000	U
	Aroclor Aroclor Aroclor Aroclor Aroclor	Analyts  Aroclor 1016 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Aroclor 1221 Aroclor 1232	Aroclor 1016 1,000 Aroclor 1242 1,000 Aroclor 1248 1,000 Aroclor 1254 1,000 Aroclor 1260 1,000 Aroclor 1221 2,000

# PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 87.5% Tetrachlorometaxylene 103%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Y . Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP52-010402-K

MATRIX SPIKE

Lab Sample ID: CX87DMS QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4778 Project: NBF Joint Material

Matrix: Joint Compound 025082.63

Date Sampled: 04/02/01 Date Received: 04/02/01

Data Release Authorized: (#

Reported: 04/13/01 4/15/4

Date extracted: 04/04/01 GPC Cleanup: No
Date analyzed: 04/12/01 05:22 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.03 g-as-rec Sulfur Cleanup: No
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

# Reported in Total ug/kg as received

CAS Number	Analyta	N CONTRACTOR CONTRACTO	Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor		w	
12672-29-6	Aroclor	1248	980	Ũ
11097-69-1	Aroclor	1254	980	U
11096-82-5	Aroclor	1260	980	U
11104-28-2	Aroclor	1551	2,000	Ü
11141-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	60.5%
Tetrachlorometaxvlene	75.0%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP52-010402-K

SPIKE DUPLICATE

QC Report No: CX87-Boeing Corporate SHEA Lab Sample ID: CX87DMSD

LIMS ID: 01-4778 Project: NBF Joint Material

025082.63

Date Sampled: 04/02/01

Data Release Authorized: ( ) Date Received: 04/02/01

Reported: 04/13/01 4/12/1

Matrix: Joint Compound

Date extracted: 04/04/01 GPC Cleanup: No

Date analyzed: 04/12/01 06:00 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes

Sulfur Cleanup: No Sample Amount: 2.01 g-as-rec

Conc/Dilution Factor: 1:1 Final Ext Vol: 20 mL

#### Reported in Total ug/kg as received

CAS Number	Analyte		Valus
12674-11-2	Aroclor	1016	1,000 U
53469-21-9	Aroclor	1242	هد سن دن
12672-29-6	Aroclor	1248	1,000 U
11097-69-1	Aroclor	1254	1,000 U
11096-82-5	Aroclor	1260	1,000 U
11104-28-2	Aroclor	1221	2,000 ਹ
11141-16-5	Aroclor	1232	1,000 U

#### PCB-Aroclor Surrogata Recovery

Decachlorobiphenyl 61.8% Tetrachlorometaxylene 78.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- 30 Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP52-010402-K

Lab Sample ID: CX87D

QC Report No: CX87-Boeing Corporate SHEA

LIMS ID: 01-4778

Project: NBF Joint Material

025082.63

Matrix: Joint Compound

Date Received: 04/02/01

Data Release Authorized: (/#

Reported: 04/13/01

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Date extracted: 04/04/01

CONSTITUENT	SYMBITE	SPIKE FOUND	SPIKE ADDED	% RECOVERY	RPD
MATRIX SPIKE					
Aroclor 1242 MATRIX SPIKE DUPLICATE	< 1000	6720	9850	68.2%	
Aroclor 1242	< 1000	7050	9950	70.9%	3.9%

Values Reported in Total ug/kg as received



Lab Sample ID: CX87

LIMS ID: 01-4775

Matrix: Joint Compound (

Data Release Authorized:

Reported: 04/13/01

QC Report No: CX87-Boeing Corporate SHEA

Project: NBF Joint Material

025082.63

LABORATORY CONTROL SAMPLE SPIKE RECOVERY

Date extracted: 04/04/01

SPIKE

SPIKE

COMSTITUENT

FOUND

ADDED

RECOVERY

LABORATORY CONTROL SAMPLE

Aroclor 1242

9760

10000 97.6%

#### Aroclor Surrogate Recoveries

Decachlorobiphenyl

88.88

Tetrachlorometaxylene

103%

Values Reported in Total ug/kg as received



# Analytical Resources, Incorporated

Analytical Chemists and Consultants

April 18, 2001

Joan McGilton
The Boeing Company
Energy and Environmental Affairs
P.O. Box 3707, M/S 7A-XA
Seattle, WA 98124-2207

ANDAU ASSOCIATES, INC.

RE: Project: NBF Joint Compound / ARI Job CX96

Dear Joan,

Please find enclosed the original Chain of Custody (COC) record and analytical results for the above referenced project. Fourteen solid samples were received in good condition on April 3, 2001. Sample NBF-SP71-010403-C2 was placed on hold pending further instruction.

Samples were analyzed for PCB Aroclors referencing EPA SW-846 method 8082. Extracts were cleaned up with sulfuric acid to eliminate chromatographic interferences.

Samples were initially scanned before analysis to determine dilution factors. Samples D, E, F, H, I and J required dilution to quantitate aroclors 1254 and 1260 within the linear range of the GC/ECD instrument. The high dilution factors caused the surrogates for samples D, E, F, H and I to dilute out. As the QC sample surrogate recoveries were within compliance, no corrective action was taken. Quantitation of aroclors 1254 and 1260 in the MS and MSD of sample NBF-SP64-010403-C2 are biased high due to possible interference from the 1242 spike.

No other analytical complications were noted. Quality control analysis results are included for your review. A copy of this report will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Stephanie Lucas Project Manager (206) 389-6154

steph@arilabs.com

SPL/sl Enclosures

cc: Kris Hendrickson, Landau, Edmonds

# Landau Associates

Requested Turnaround: Standard (2WK)

Notes:
Please soud hard Copy dress

130 2nd Avenue S. Edmonds, WA 98020 Phone (425) 778-0907 Fax (425) 778-6409

**Chain-of-Custody Record** 

49

									- Sunta Maria	<u>-977 91 7</u> 23 22.1
	Project NBF Joint Madarial	Joh No. <b>6257</b>	N9263			Test	ing Pai	rameters	Doan McGillon	
			205.92		North V	///	///	////	The Boeing Company	5 lectronic esp
	Client Jan McGilton-The Ba				CON CON		11	III	Seattle, WA 98124 6	3 Ametalian
	Project Location North Booking Fract	ld-Seattle, WA		As.	140, 24	///	/ / /	////	(a) Trong Hardin bon.	Under asso
	Sampler's Name Jennifer Parso	<del>-</del>			XIND /	//			Fandali Assoc. 130 2nd Ave 5 Bornals, WA 95020 So.	auget Reporter
	Outspiel & Walte De Mar Mar 102 SO	<u> </u>	A.L	003		///	/ / /	/ / /	Edmands, WA 98020 10.	ng/kg por
	Sample No. Date Time	Location	No. of Containers	\TC\ 1	7 / /	//			Observations/Comments	Artelor
NE	F-SP62-010403-H 4/3/01 07:25 N.	13-390		$\mathbf{X}$					The second secon	
NB	SP63-010403-H 4/3/6107:45 N	. d. 3-390		×						
V 857	-SP64-010403-C2 4/3/01 0805	N:04.3-390		Х		<u> </u>		<u>  Ms/</u>	MSD	
UB	-SPG5-010403-A 4/3/01 0840	Na13-390,3-369		<b>X</b>			<u> </u>	<u> </u>		
٧R	-SP66-010403-A 4/3/01 0905 No	43-310, 3-369		<b>X</b>		<u> </u>				
	F-SPG7-010403-Res, G 43/01 0948			<b>X</b>						
NB	-5968-010403-Res.H4/3/01/013	15 Stalls A-4 A-5		X			<del>                                     </del>	<u> </u>		
NB	F-SP69-010403-Res. 44/3/01/11	30 S. of Skell A-C. A	5	× X		<u> </u>				
VB]	-5070-010403- Rog 4/3/0) 1	320 Sinforall Algo	95/		<del></del>	<del>                                     </del>	<del>                                     </del>	+		
ND	-SP71-010403-C2 4/3/01 13	10 3-364	-/			<del>                                     </del>	<del>                                     </del>	Year	e Archie	-
	F-SP72-010403-C2 4/301 1355		<del>                                     </del>	<del>*</del> /			<del>  </del>			
VIIX	-5P73-010403-C2 4/3/01 1415	N. 24 3"390	<del>                                     </del>			1-1-	<del>                                     </del>			
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N	15-5P75-0K403-G-4/3/01 1450	O TOXIWOLY	-/	<u> </u>		1-1-		<u> </u>		
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	Jennifer A. Parsons	Signature	$\Delta M$ .		Signature				Signature	NA COLOR
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#### SOIL AROCLOR SURROGATE SUMMARY

Matrix: Joint Compound

QC Report No: CX96

Project: NBF Joint Material

025082.63

LIMS ID	Lab ID	Client ID	TCMX #	DCBP #	TOT OUT
01-4841MB	040601MB	Method Blank	88.0%	82.2%	0
01-4841SB	040601SB	Lab Control	88.0%	82.0%	0
01-4841	CX96A	NBF-SP62-010403-H	55.2%	88.5%	0
01-4842	CX96B	NBF-SP63-010403-H	52.5%	81.2%	0
01-4843	CX96C	NBF-SP64-010403-C2	82.5%	85.2%	C
01-4843MS	CX96C	NBF-SP64-010403-C2-MS	83.8%	86.8%	0
01-4843MSD	CX96C	NBF-SP64-010403-C2-MSD	87.5%	92.5%	0
01-4844	CX96D	NBF-SP65-010403-A	D	D	C
01-4845	CX96E	NBF-SP66-010403-A	D	D	0
01-4846	CX96F	NBF-SP67-010403-Res.G	D	D	0
01-4847	CX96G	NBF-SP68-010403-Res.H	44.0%	61.0%	0
01-4848	СХЭ6Н	NBF-SP69-010403-Res.H	D	D	G
01-4849	CX96I	NBF-SP70-010403-Res.G	D	D	0
01-4850	CX96J	NBF-SP72-010403-C2	64.5%	92.0%	0
01-4851	CX96K	NBF-SP73-010403-C2	77.8%	80.5%	0
01-4852	CX96L	NBF-SP74-010403-Res.H	39.5%	63.8%	0
01-4853	CX96M	NBF-SP75-010403-G	74.5%	74.8%	0

			LCS/MB LIMITS	QC LIMITS
(TCMX)	==	Tetrachloro-m-xylene	(46-132)	(34-128)
(DCBP)	55	Decachlorobiphenyl	(61-122)	(39-132)

<sup>#</sup> Column to be used to flag recovery values

- Values outside of required QC limits
- D Surrogate Compound diluted out

Page 1 for CX96

FORM-II PCB



Sample No: NBF-SP62-010403-H

Lab Sample ID: CX96A QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4841 Project: NBF Joint Material

025082.63

Date Sampled: 04/03/01

Data Release Authorized: C/f Date Received: 04/03/01

Reported: 04/20/01 4/14/2

Matrix: Joint Compound

Date extracted: 04/06/01 GPC Cleanup: No
Date analyzed: 04/13/01 20:22 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.00 g-as-rec Sulfur Cleanup: Yes
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Mumber	Analyte			
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	10,000	
11096-82-5	Aroclor	1250	7,300	
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Arcclor	1232	1,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 88.5% Tetrachlorometaxylene 55.2%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP63-010403-H

Lab Sample ID: CX96B QC Report No

LIMS ID: 01-4842 Matrix: Joint Compound QC Report No: CX96-Boeing Corporate SHEA

Project: NBF Joint Material

025082.63

Date Sampled: 04/03/01

Data Release Authorized: 4 Date Received: 04/03/01

Reported: 04/20/01 //20/2

Date extracted: 04/06/01

Date analyzed: 04/13/01 20:56

Instrument ID: ECD1

Sample Amount: 2.00 g-as-rec

Final Ext Vol: 20 mL

GPC Cleanup: No

Florisil Cleanup: No

Acid Cleanup: Yes

Sulfur Cleanup: Yes

Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Number	Analyte		Valus
12674-11-2	Aroclor	1016	1,000 U
53469-21-9	Aroclor	1242	1,000 U
12672-29-6	Aroclor	1248	1,000 ਹ
11097-69-1	Aroclor	1254	8,600
11096-82-5	Aroclor	1260	5,100
11104-28-2	Aroclor	1221	2,000 U
11141-16-5	Aroclor	1232	1,000 U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 81.2% Tetrachlorometaxylene 52.5%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NEF-SP64-010403-C2

Lab Sample ID: CX96C

QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4843

Project: NBF Joint Material

Matrix: Joint Compound

025082.63

Date Sampled: 04/03/01

Data Release Authorized: 4/

Date Received: 04/03/01

Reported: 04/20/01 //20/

GPC Cleanup: No

Date analyzed: 04/17/01 22:47

Florisil Cleanup: No

Instrument ID: ECD1

Date extracted: 04/06/01

Acid Cleanup: Yes

Sample Amount: 2.01 g-as-rec

Sulfur Cleanup: Yes

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

## Reported in Total ug/kg as received

CAS Number	Analyte	and the second district contract of the second district contract of the second district of	Value	
•				
12674-11-2	Aroclor	1016	1,000	Ŭ
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,400	
11096-82-5	Aroclor	1260	1,300	
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	Ŭ

#### PCB-Arodlor Surrogate Recovery

Decachlorobiphenyl	85.2%
Tetrachlorometaxylene	82.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- R Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NVIndicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP65-010403-A

Lab Sample ID: CX96D

QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4844

Project: NBF Joint Material

Matrix: Joint Compound

025082.63

Data Release Authorized: (4

Date Sampled: 04/03/01

Date Received: 04/03/01

Reported: 04/20/01

Date extracted: 04/06/01

GPC Cleanup: No

Date analyzed: 04/17/01 12:42

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.02 g-as-rec

Sulfur Cleanup: Yes

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:2000

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	2,000,000	J. Company
53469-21-9	Aroclor	1242	2,000,000	3
12672-29-6	Aroclor	1248	2,000,000	U
11097-69-1	Aroclor	1254	52,000,000	
11096-82-5	Aroclor	1260	16,000,000	
11104-28-2	Aroclor	1221	4,000,000	Ü
11141-16-5	Aroclor	1232	2,000,000	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	D
Tetrachlorometaxylene	D

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector.  $\mathbb{R}^{3}$ Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- 72 Found in associated method blank
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- MA Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP66-010403-A

Lab Sample ID: CX96E QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4845 Project: NBF Joint Material

025082.63

Date Sampled: 04/03/01

Data Release Authorized: 44 Date Received: 04/03/01

Matrix: Joint Compound

Date extracted: 04/06/01 GPC Cleanup: No
Date analyzed: 04/17/01 13:10 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.00 g-as-rec Sulfur Cleanup: Yes
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:2000

#### Reported in Total ug/kg as received

CAS Number	Analyte		3115 	
12674-11-2	Aroclor	1016	2,000,000	U
53469-21-9	Aroclor	1242	2,000,000	
12672-29-6	Aroclor	1248	2,000,000	
11097-69-1	Aroclor	1254	52,000,000	
11096-82-5	Aroclor	1260	17,000,000	
11104-28-2	Aroclor	1221	4,000,000	U
11141-16-5	Aroclor	1232	2,000,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	D
Tetrachlorometaxvlene	700

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP67-010403-Res.G

Lab Sample ID: CX96F QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4846 Project: NBF Joint Material

025082.63

Date Sampled: 04/03/01

Data Release Authorized: 4 Date Received: 04/03/01

Reported: 04/20/01 1/20/0/

Matrix: Joint Compound

Date extracted: 04/06/01 GPC Cleanup: No Date analyzed: 04/14/01 04:41 Florisil Cleanup: No

Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.03 g-as-rec Sulfur Cleanup: Yes

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:500

#### Reported in Total ug/kg as received

CAS Number	Analyta	inggangan parametar kanada makan kanada ka	Value	
12674-11-2	Aroclor	1016	490,000	Ű
53469-21-9	Aroclor	1242	490,000	U
12672-29-6	Aroclor	1248	490,000	U
11097-69-1	Arcelor	1254	9,700,000	
11096-82-5	Aroclor	1260	16,000,000	
11104-28-2	Aroclor	1221	980,000	U
11141-16-5	Aroclor	1232	490,000	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl Decachlorometaxylene Decachlorometaxylene

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.
  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP68-010403-Res.H

Lab Sample ID: CX96G

QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4847

Project: NBF Joint Material

Matrix: Joint Compound

025082.63

Data Release Authorized: C/f

Date Sampled: 04/03/01

Reported: 04/20/01

4/24/1

Date Received: 04/03/01

Date extracted: 04/06/01

GPC Cleanup: No

Date analyzed: 04/14/01 05:14

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.01 g-as-rec

Sulfur Cleanup: Yes

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016.	1,000 U	
53469-21-9	Aroclor	1242	1,000 U	
12672-29-6	Aroclor	1248	1,000 U	
11097-69-1	Aroclor	1254	11,000	
11096-82-5	Aroclor	1260	9,900	
11104-28-2	Aroclor	1221	2,000 U	
11141-16-5	Aroclor	1232	1,000 U	

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 61.0% Tetrachlorometaxylene 44.0%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Reguired
- Indicates no value reported due to saturation of the detector. S
- Ď Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Ž. Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



#### Sample No: NEF-SP69-010403-Res.H

Lab Sample ID: CX96H QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4848 Project: NBF Joint Material

025082.63

Date Sampled: 04/03/01

Data Release Authorized: Clf Date Received: 04/03/01

Reported: 04/20/01 4/24/1

Matrix: Joint Compound

Date extracted: 04/06/01 GPC Cleanup: No Date analyzed: 04/14/01 08:33 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.01 q-as-rec Sulfur Cleanup: Yes Final Ext Vol: 20 mL Conc/Dilution Factor: 1:100

## Reported in Total ug/kg as received

CAS Number	Analyte	<u></u>	Value	
12674-11-2	Aroclor	1016	100,000	Ü
53469-21-9	Aroclor	1242	100,000	Ü
12672-29-6	Aroclor	1248	100,000	U
11097-69-1	Aroclor	1254	1,400,000	
11096-82-5	Aroclor	1260	840,000	
11104-28-2	Aroclor	1221	200,000	U
11141-16-5	Aroclor	1232	100,000	U

#### PC3-Aroclor Surrogate Recovery

Decachlorobiphenyl n Tetrachlorometaxylene

- Indicates an estimated value when that result is less than the calculated detection limit.
- 1 Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector. S
- D Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Ð Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP70-010403-Res.G

500,000 U

QC Report No: CX96-Boeing Corporate SHEA Lab Sample ID: CX96I

LIMS ID: 01-4849 Project: NBF Joint Material

025082.63

Date Sampled: 04/03/01 Data Release Authorized: (//

Date Received: 04/03/01

Reported: 04/20/01

Matrix: Joint Compound

Date extracted: 04/06/01 GPC Cleanup: No Date analyzed: 04/14/01 09:39 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sulfur Cleanup: Yes

Sample Amount: 2.01 g-as-rec Final Ext Vol: 20 mL Conc/Dilution Factor: 1:500

Reported in Total ug/kg as received

#### CAS Number Analyte Value 12674-11-2 Aroclor 1016 500,000 U 53469-21-9 Aroclor 1242 12672-29-6 Aroclor 1248 500,000 U 500,000 U 11097-59-1 Aroclor 1254 9,000,000 11096-82-5 Aroclor 1260 7,100,000 11104-28-2 Aroclor 1221 1,000,000 U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	D
Tetrachlorometaxylene	D

11141-16-5 Aroclor 1232

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- 30 Indicates the surrogate was diluted out.
- 77 Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses. NV
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP72-010403-C2

Lab Sample ID: CX96J

QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4850

Project: NBF Joint Material

Matrix: Joint Compound

025082.63

Date Sampled: 04/03/01

Data Release Authorized: 6/4

Reported: 04/20/01

Date Received: 04/03/01

Date extracted: 04/06/01

GPC Cleanup: No

Date analyzed: 04/14/01 10:45

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.03 g-as-rec

Sulfur Cleanup: Yes

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:2

## Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	2,000	U
53469-21-9	Aroclor	1242	2,000	U
12672-29-6	Aroclor	1248	4,500	¥
11097-69-1	Aroclor	1254	13,000	
11096-82-5	Aroclor	1260	5,300	Y
11104-28-2	Aroclor	1221	3,900	U
11141-16-5	Aroclor	1232	2,000	Ũ

## PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	92.	0%
Tetrachlorometaxylene	64.	5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- 33 Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP73-010403-C2

Lab Sample ID: CX96K

QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4851

Project: NBF Joint Material

Matrix: Joint Compound

025082.63

Date Sampled: 04/03/01

Data Release Authorized: ( A

Reported: 04/20/01

Date Received: 04/03/01

Date extracted: 04/06/01

GPC Cleanup: No

Date analyzed: 04/14/01 11:19

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.04 g-as-rec

Sulfur Cleanup: Yes

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

### Reported in Total ug/kg as received

CAS Number	Analyte	·	Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242	980	Ü
12672-29-6	Aroclor	1248	980	Ü
11097-69-1	Aroclor	1254	1,000	
11096-82-5	Aroclor	1260	980	U
11104-28-2	Aroclor	1221	2,000	Ũ
11141-16-5	Aroclor	1232	980	Ū

#### FCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 80.5% Tetrachlorometaxylene 77.8%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the Ü given detection limit.
- Pound in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences. NR
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP74-010403-Res.H

Lab Sample ID: CX96L QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4852 Project: NBF Joint Material

Matrix: Joint Compound 025082.63

Date Sampled: 04/03/01

Data Release Authorized: CM Date Received: 04/03/01

Reported: 04/20/01 4/20/01

Date extracted: 04/06/01 GPC Cleanup: No
Date analyzed: 04/14/01 11:52 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.00 g-as-rec Sulfur Cleanup: Yes
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

Cas	Number	Analyte	- Commentation (Commentation of the Section of the	Value	
1267	4-11-2	Aroclor	1016	1,000	U
5346	9-21-9	Aroclor	1242	1,000	U
1267	72-29-6	Aroclor	1248	1,000	Ũ
1109	7-69-1	Aroclor	1254	1,800	
1109	6-82-5	Aroclor	1260	1,000	U
1110	4-28-2	Aroclor	1221	2,000	Ü
1114	1-16-5	Aroclor	1232	1,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 63.8% Tetrachlorometaxylene 39.5%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP75-010403-G

Lab Sample ID: CX96M QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4853 Project: NBF Joint Material

025082.63

Date Sampled: 04/03/01

Data Release Authorized: (# Date Received: 04/03/01

Reported: 04/20/01 4/1/10

Matrix: Joint Compound

Date extracted: 04/06/01 GPC Cleanup: No
Date analyzed: 04/14/01 12:25 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes

Sample Amount: 2.01 g-as-rec Sulfur Cleanup: Yes Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	Ü
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	10,000	
11096-82-5	Aroclor	1260	4,100	
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Aroclor	1232	1,000	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 74.8% Tetrachlorometaxylene 74.5%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP64-010403-C2

MATRIA SPIKE

Lab Sample ID: CX96CMS QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4843 Project: NBF Joint Material

Matrix: Joint Compound

025082.63

Date Sampled: 04/03/01 Data Release Authorized: (// Date Received: 04/03/01

Reported: 04/20/01

Date extracted: 04/06/01

GPC Cleanup: No Date analyzed: 04/18/01 00:14 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes

Sample Amount: 2.01 g-as-rec Sulfur Cleanup: No 20 mL Conc/Dilution Factor: 1:1 Final Ext Vol:

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value
12674-11-2	Aroclor	1016	1,000 U
53469-21-9	Aroclor	1242	Alter made spilij
12672-29-6	Aroclor	1248	1,000 U
11097-69-1	Aroclor	1254	2,300
11096-82-5	Aroclor	1260	1,400
11104-28-2	Aroclor	1221	2,000 U
11141-15-5	Aroclor	1232	1,000 U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	86.81	Ď
Tetrachlorometaxylene	83.88	ė

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out. Ď
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP64-010403-C2

SPIKE DUPLICATE

Lab Sample ID: CX96CMSD QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4843 Project: NBF Joint Material

Matrix: Joint Compound 025082.63

Date Sampled: 04/03/01

Data Release Authorized: C/4 Date Received: 04/03/01

Reported: 04/20/01 4/10/1

Date extracted: 04/06/01 GPC Cleanup: No Date analyzed: 04/18/01 01:40 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.04 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte	District and the contract of t	Value	
		16 May 12 340	00 de de	94
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242	Killer 19	nder 100e
12672-29-6	Aroclor	1248	980	U
11097-69-1	Aroclor	1254	2,400	
11096-82-5	Aroclor	1260	1,600	
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 92.5% Tetrachlorometaxylene 87.5%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP64-010403-C2

Lab Sample ID: CX96C

QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4843

Project: NBF Joint Material

Matrix: Joint Compound

025082.63

Date Received: 04/03/01

Data Release Authorized: ([])

Reported: 04/18/01

WATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Date extracted: 04/06/01

CONSTITUENT	Sample	SPIKE FOUND	SPIKE ADDED	% Recovery	RPD
MATRIX SPIKE					
Aroclor 1242 MATRIX SPIKE DUPLICATE	< 1000	7870	9950	79.1%	
Aroclor 1242	< 1000	8050	9800	82.1%	3.7%

Values Reported in Total ug/kg as received



#### Sample No: Method Blank

Lab Sample ID: CX96MB

QC Report No: CX96-Boeing Corporate SHEA

LIMS ID: 01-4841

Project: NBF Joint Material

Matrix: Joint Compound

025082.63

Date Sampled: NA

Data Release Authorized: (//

Date Received: NA

Reported: 04/20/01

Date extracted: 04/06/01

GPC Cleanup: No

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.00 g-as-rec

Date analyzed: 04/13/01 19:16

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte			
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	2,000	U
11096-82-5	Aroclor	1260	1,000	Ũ
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Aroclor	1232	1,000	U

#### PCB-Arcolor Surrogate Recovery

Decachlorobiphenyl	82.2%
Tetrachlorometaxylene	88.0%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- C Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the 11 given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Lab Sample ID: CX96

LIMS ID: 01-4841

Matrix: Joint Compound

QC Report No: CX96-Boeing Corporate SHEA

Project: NBF Joint Material

025082.63

Data Release Authorized: 6 4

Reported: 04/18/01

LABORATORY CONTROL SAMPLE SPIKE RECOVERY

Date extracted: 04/06/01

SPIKE

SPIKE

CONSTITUENT

FOUND

ADDED

rrcovery

LABORATORY CONTROL SAMPLE

Aroclor 1242

8270

10000

82.7%

Aroclor Surrogate Recoveries

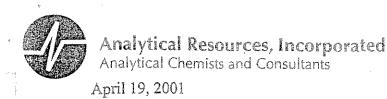
Decachlorobiphenyl

82.0%

Tetrachlorometaxylene

88.0%

Values Reported in Total ug/kg as received



Joan McGilton
The Boeing Company
Energy and Environmental Affairs
P.O. Box 3707, M/S 7A-XA
Seattle, WA 98124-2207

RE: Project: NBF Joint Compound / ARI Job CY17

Dear Joan,

Please find enclosed the original Chain of Custody (COC) record and analytical results for the above referenced project. Thirteen solid samples were received in good condition on April 4, 2001.

Samples were analyzed for PCB Aroclors referencing EPA SW-846 method 8082. Extracts were cleaned up with sulfuric acid to eliminate chromatographic interferences.

Samples were initially scanned before analysis to determine dilution factors. Samples A, C, D, E, F, G, H, and J required dilution to quantitate aroclors 1254 and 1260 within the linear range of the GC/ECD instrument. The high dilution factors caused the surrogates for samples A, C, D, E, G, and J to dilute out. As the QC sample surrogate recoveries were within compliance, no corrective action was taken for the loss of surrogates. Quantitation of aroclor 1242 in the MS and MSD of sample NBF-SP87-010404-K are not reported due to interference from the 1242 spike.

No other analytical complications were noted. Quality control analysis results are included for your review. A copy of this report will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Stephanie Lucas

Project Manager (206) 389-6154

steph@arilabs.com

SPL/sl

Enclosures

cc: Kris Hendrickson, Landau, Edmonds

Project NBF Joint Material Job No. 025083.63  Client Jan McGilton - The Recing Company  Project Location North Breing Field-Scattle, NA  Sampler's Name Jennifer Takons  Testing Parameters  The Boeing Company  R.O. Box 3707  Scattle, WA 98124  OKris Hendrickson  Landau Association Repo	9 theoforic
Special Shipment/Handling or Storage Requirements  Relinquished by Signature  Date Trinted Name  Printed	uples up bkink



## SOIL AROCLOR SURROGATE SUMMARY

Matrix: Joint Compound

QC Report No: CY17

Project: NBF Joint Material

025083.63

LIMS ID	Lab ID	Client ID	TOX #	DCSP #	TOT OUT
pro sig proj. proj. or of Street	0.40003350	Section of Section 1.	a de co	na na	-
01-4971MB	040601MB	Method Blank	100%	93.0%	0
01-4971SB	040601SB	Lab Control	102%	93.5%	0
01-4971	CY17A	NBF-SP76-010404-Res.G	D	D	0
01-4972	CY17B	NBF-SP77-010404-Res.H	57.5%	87.5%	0
01-4973	CY17C	NBF-SP78-010404-G	D	D	0
01-4974	CY17D	NBF-SP79-010404-G	D	D	0
01-4975	CY17E	NBF-SP80-010404-Res.G	D	D	0
01-4976	CY17F	NBF-SP81-010404-Res.H	65.0%	124%	Ő
01-4977	CY17G	NBF-SP82-010404-G	D	D	0
01-4978	CY17H	NBF-SP83-010404-A	77.5%	100%	0
01-4979	CY17I	NBF-SP84-010404-Res.H	72.2%	114%	0
01-4980	CY17J	NBF-SP85-010404-Res.G	D	D	0
01-4981	CY17K	NBF-SP86-010404-Res.H	66.8%	79.0%	0
01-4982	CY17L	NBF-SP87-010404-K	84.5%	83.0%	0
01-4982MS	CY17L	NBF-SP87-010404-K-MS	82.8%	81.0%	Ç
01-4982MSD	CY17L	NBF-SP87-010404-K-MSD	102%	106%	0
01-4983	CY17M	NBF-SP88-010404-H	90,2%	76.8%	0

			LCS/MB	LIMITS	QC	LIMITS
(TCMX)	1812	Tetrachloro-m-xylene	(45	-132)	(3	4-128}
(DCBP)	盐	Decachlorobiphenyl	(61	-122)	(3	9-132)

- # Column to be used to flag recovery values
- Values outside of required QC limits
- D Surrogate Compound diluted out

Page 1 for CY17

FORM-II PCB



Sample No: NBF-SP76-Q10404-Res.G

Lab Sample ID: CY17A QC Report No: CY17-Boeing Corporate SHEA

Project: NBF Joint Material LIMS ID: 01-4971

025083.63

Date Sampled: 04/04/01 Date Received: 04/04/01

Data Release Authorized: 1/4

Matrix: Joint Compound

Reported: 04/18/01

Date extracted: 04/05/01 GPC Cleanup: No Date analyzed: 04/14/01 16:50 Florisil Cleanup: No Acid Cleanup: Yes Instrument ID: ECD1 Sample Amount: 2.01 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:500

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	500,000	Ü
53469-21-9	Aroclor	1242	500,000	U
12672-29-6	Arcclor	1248	500,000	U
11097-69-1	Arcclor	1254	10,000,000	
11096-82-5	Aroclor	1260	7,200,000	
11104-28-2	Aroclor	1221	1,000,000	U
11141-16-5	Aroclor	1232	500,000	Ü

# PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	
Tetrachlorometaxylene	Į.

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector. S
- Indicates the surrogate was diluted out.
- 77 Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank 13
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses. NV
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP77-010404-Res.H

Lab Sample ID: CY17B

QC Report No: CY17-Boeing Corporate SHEA

LIMS ID: 01-4972

Project: NBF Joint Material

Matrix: Joint Compound

025083.63

Date Sampled: 04/04/01

Data Release Authorized: ( 14

Date Received: 04/04/01

Reported: 04/18/01

Date extracted: 04/06/01

GPC Cleanup: No

Date analyzed: 04/14/01 17:23

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.02 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

# Reported in Total ug/kg as received

CAS Number	Analyta		Value	
12674-11-2	Aroclor	1016	990	5-m
53469-21-9	Aroclor		990	
12672-29-6	Aroclor	1248	990	U
11097-69-1	Aroclor	1254	12,000	
11096-82-5	Aroclor	1250	3,500	
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	990	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	87.5≹
Tetrachlorometaxvlene	57.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- 17 Indicates compound was analyzed for, but not detected at the given detection limit.
- 73 Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP78-010404-G

Lab Sample ID: CY17C

QC Report No: CY17-Boeing Corporate SHEA

LIMS ID: 01-4973

Project: NBF Joint Material

Matrix: Joint Compound

025083.63

Date Sampled: 04/04/01

Data Release Authorized: (//

Date Received: 04/04/01

Reported in Total ug/kg as received

Reported: 04/18/01

Date extracted: 04/06/01

GPC Cleanup: No

Date analyzed: 04/14/01 18:30

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.05 g-as-rec Final Ext Vol: 20 mL

Sulfur Cleanup: No Conc/Dilution Factor: 1:1000

CAS Number	Analyte	**************************************	aulsV	
12674-11-2	Aroclor	1016	980,000	Ü
53469-21-9	Aroclor	1242	980,000	Ü
12672-29-6	Aroclor	1248	980,000	U
11097-69-1	Arodlor	1254	30,000,000	
11096-82-5	Aroclor	1260	9,300,000	
11104-28-2	Aroclor	1221	2,000,000	U
11141-16-5	Aroclor	1232	980,000	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	1
Tetrachlorometaxvlene	9110

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the datector.
- ũ Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP79-010404-G

Lab Sample ID: CY17D QC Report No: CY17-Boeing Corporate SHEA

Project: NBF Joint Material

LIMS ID: 01-4974 Matrix: Joint Compound

025083.63

Date Sampled: 04/04/01 Data Release Authorized: ( A

Date Received: 04/04/01

Reported: 04/18/01

Date extracted: 04/06/01 GPC Cleanup: No Date analyzed: 04/17/01 15:08 Florisil Cleanup: No

Acid Cleanup: Yes Instrument ID: ECD1 Sample Amount: 2.04 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:2000

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	2,000,800	Ũ
53469-21-9	Aroclor	1242	2,000,000	U
12672-29-6	Aroclor	1248	2,000,000	U
11097-69-1	Arocler	1254	45,000,000	
11096-82-5	Aroclor	1260	14,000,000	
11104-28-2	Arcclor	1221	3,900,000	Ü
11141-16-5	Aroclor	1232	2,000,000	

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	Ľ
Tetrachlorometaxylene	ľ

- Indicates an estimated value when that result is less than the calculated detection limit.
- 143 Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector. 3
- Indicates the surrogate was diluted out. 13
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- Indicates compound was not analyzed. NΑ
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP80-010404-Res.G

Lab Sample ID: CY17E QC Report No: CY17-Boeing Corporate SHEA

Project: NBF Joint Material LIMS ID: 01-4975

025083.63

Date Sampled: 04/04/01 Date Received: 04/04/01

Data Release Authorized: ( )

Reported: 04/19/01

Matrix: Joint Compound

Date extracted: 04/06/01 GPC Cleanup: No Date analyzed: 04/17/01 15:41 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.04 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:2000

#### Reported in Total ug/kg as received

CAS Number	Analyte	ومعا بموستان ارتبارات شفوات فاستوسي والمساهاري	Value	
12674-11-2	Aroclor	1016	2,000,000	Ü
53469-21-9	Aroclor	1242	2,000,000	U
12672-29-6	Aroclor	1248	2,000,000	U
11097-69-1	Aroclor	1254	44,000,000	
11096-82-5	Aroclor	1260	13,000,000	
11104-28-2	Aroclor	1221	3,900,000	Ü
11141-16-5	Aroclor	1232	2,000,000	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	Ē
Tetrachlorometaxvlene	Ī

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. 54 Dilution Required
- Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP81-010404-Res.H

Lab Sample ID: CY17F

QC Report No: CY17-Boeing Corporate SHEA

LIMS ID: 01-4976

Project: NBF Joint Material

Matrix: Joint Compound

025083.63

Date Sampled: 04/04/01

Data Release Authorized: ( A

Reported: 04/18/01

Date Received: 04/04/01

Date extracted: 04/06/01

GPC Cleanup: No

Date analyzed: 04/15/01 00:02

Florisil Cleanup: No Acid Cleanup: Yes

Instrument ID: ECD1

Sulfur Cleanup: No

Sample Amount: 2.02 g-as-rec Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:5

#### Reported in Total ug/kg as received

CAS Number	Analyte	**************************************	Value
12674-11-2	Aroclor	1016	5,000 T
53469-21-9	Aroclor	1242	5,000 U
12672-29-6	Aroclor	1248	9,500 Y
11097-69-1	Aroclor	1254	36,000
11096-82-5	Aroclor	1260	14,000
11104-28-2	Aroclor	1221	9,900 T
11141-16-5	Aroclor	1232	5,000 U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	124%
Tetrachlorometaxvlene	65.0%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. 33 Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP82-010404-G

QC Report No: CY17-Boeing Corporate SHEA Lab Sample ID: CY17G

LIMS ID: 01-4977 Project: NBF Joint Material

025083.63

Date Sampled: 04/04/01 Data Release Authorized: ( / Date Received: 04/04/01

Matrix: Joint Compound

Reported: 04/18/01

Date extracted: 04/06/01 GPC Cleanup: No Date analyzed: 04/17/01 16:15 Florisil Cleanup: No Acid Cleanup: Yes Instrument ID: ECD1 Sulfur Cleanup: No Sample Amount: 2.05 g-as-rec Final Ext Vol: 20 mL Conc/Dilution Factor: 1:2000

#### Reported in Total ug/kg as received

CAS Number	Analyte	mikaliya kapinangan palay yi immiliya da isi isinin mayayayaya aa isi ah kay maanka ka ay isinin ka isinin isi	Value	
12674-11-2	Aroclor	1016	2,000,000	U
53469-21-9	Aroclor	1242	2,000,000	U
12672-29-6	Aroclor	1248	2,000,000	U
11097-69-1	Aroclor	1254	45,000,000	
11096-82-5	Aroclor	1260	16,000,000	
11104-28-2	Aroclor	1221	3,900,000	Ü
11141-16-5	Aroclor	1232	2,000,000	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	D
Tetrachiorometaxylene	ī

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out. Ď
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- MA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP83-010404-A

Lab Sample ID: CY17H

QC Report No: CY17-Boeing Corporate SHEA

LIMS ID: 01-4978

Project: NBF Joint Material

Matrix: Joint Compound

025083.63

Date Sampled: 04/04/01

Data Release Authorized: / D

Date extracted: 04/06/01

Date analyzed: 04/15/01 04:27

Date Received: 04/04/01

Reported: 04/18/01

GPC Cleanup: No

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes Sample Amount: 2.00 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:5

### Reported in Total ug/kg as received

CAS Number	Analyts		
12674-11-2	Aroclor	1016	5,000 U
53469-21-9	Aroclor	1242	5,000 T
12672-29-6	Aroclor	1248	5,000 U
11097-69-1	Aroclor	1254	27,000
11096-82-5	Aroclor	1260	16,000
11104-28-2	Aroclor	1221	10,000 U
11141-16-5	Aroclor	1232	5,000 U

#### PCB-Arodior Surrogate Recovery

Decachlorobiphenyl	100%
Tetrachlorometaxylene	77.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. 10 Dilution Required
- 8 Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- 17 Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank 23
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP84-010404-Res.H

Lab Sample ID: CY17I QC Report No: CY17-Boeing Corporate SHEA

LIMS ID: 01-4979 Project: NBF Joint Material

025083.63

Date Sampled: 04/04/01

Date Received: 04/04/01 Data Release Authorized: ( )

Reported: 04/18/01

Matrix: Joint Compound

Date extracted: 04/06/01 GPC Cleanup: No Date analyzed: 04/17/01 17:21 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.01 g-as-rec Sulfür Cleanup: No Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

Reported in Total ug/kg as received

CAS Number	<u>Analyte</u>		Value	
12674-11-2	Aroclor	1016	1,000	Ü
53469-21-9	Aroclor	1242	1,000	1
12672-29-6	Aroclor	1248	2,000	Ž,
11097-69-1	Arcclor	1254	13,000	
11096-82-5	Aroclor	1260	11,000	
11104-28-2	Aroclor	1221	2,000	Ū
11141-16-5	Aroclor	1232	1,000	U

# PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 114% Tetrachlorometaxylene 72.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- 13 Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences. NR
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP85-010404-Res.G

Lab Sample ID: CY17J

QC Report No: CY17-Boeing Corporate SHEA

Project: NBP Joint Material

LIMS ID: 01-4980

025083.63

Matrix: Joint Compound

Data Release Authorized: / (

Date Sampled: 04/04/01

Date Received: 04/04/01

Reported: 04/18/01

Date extracted: 04/06/01

GPC Cleanup: No

Date analyzed: 04/15/01 07:13

Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.03 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:500

# Reported in Total ug/kg as received

CAS Number	Analyta		Value	
12674-11-2	Aroclor	1016	490,000	U
53469-21-9	Aroclor	1242	490,000	U
12672-29-6	Aroclor	1248	490,000	U
11097-69-1	Aroclor	1254	1,900,000	
11096-82-5	Aroclor	1260	2,300,000	
11104-28-2	Aroclor	1221	980,000	U
11141-16-5	Aroclor	1232	490,000	Ü

# PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	1
Tetrachlorometaxylene	1

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. 13 Dilution Required
- Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- 1 Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- NA Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP86-010404-Res.H

Lab Sample ID: CY17K QC Report No: CY17-Boeing Corporate SHEA

LIMS ID: 01-4981 Project: NBF Joint Material

025083.63

Date Sampled: 04/04/01

Data Release Authorized: ( Date Received: 04/04/01

Reported: 04/18/01 4/16/2

Matrix: Joint Compound

Date extracted: 04/06/01 GPC Cleanup: No
Date analyzed: 04/17/01 17:55 Florisil Cleanup: No
Instrument ID: ECD1 Acid Cleanup: Yes
Sample Amount: 2.01 g-as-rec Sulfur Cleanup: No
Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	Ũ
12672-29-6	Aroclor	1248	2,200	Y
11097-69-1	Aroclor	1254	4,800	
11096-82-5	Aroclor	1260	3,300	
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	U

#### PCB-Arodlor Surrogate Recovery

Decachlorobiphenyl 79.0% Tetrachlorometaxylene 66.8%

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.
  Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences.

  The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NEF-SP87-010404-K

Lab Sample ID: CY17L

QC Report No: CY17-Boeing Corporate SHEA

LIMS ID: 01-4982

Project: NBF Joint Material

Matrix: Joint Compound

025083.63

Date Sampled: 04/04/01

Data Release Authorized: ( |

Date Received: 04/04/01

4/19/1

Reported: 04/18/01

Date extracted: 04/06/01

GPC Cleanup: No

Date analyzed: 04/15/01 14:25 Instrument ID: ECD1

Florisil Cleanup: No Acid Cleanup: Yes

Sample Amount: 2.01 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS	Munber	Analyte	grammoniansk <del>i s</del> emenu a militaraja karakski pisas o <del>g menomenu menomenu menomenu a sistema ja kriti</del> na karakski	Value	
			•	÷	
1267	4-11-2	Aroclor	1016	1,000	Ü
5346	9-21-9	Aroclor	1242	1,000	U
1267	2-29-6	Aroclor	1248	1,000	Ŭ
1109	7-69-1	Aroclor	1254	780	i Lij
1109	6-82-5	Aroclor	1260	1,000	U
1110	)4-28-2	Aroclor	1221	2,000	U
1114	1-16-5	Aroclor	1232	1,000	U

#### PCB-Arocior Surrogate Recovery

Decachlorobiphenyl	83.0%
Tetrachlorometaxylene	84.5%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- 5.... Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- 77 Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- Indicates compound was not analyzed.
- N.A. Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP88-010404-H

QC Report No: CY17-Boeing Corporate SHEA Lab Sample ID: CY17M

LIMS ID: 01-4983 Project: NBF Joint Material

025083.63

Date Sampled: 04/04/01 Date Received: 04/04/01

Data Release Authorized: ( |

Matrix: Joint Compound

Reported: 04/18/01

Date extracted: 04/06/01 GPC Cleanup: No Date analyzed: 04/17/01 19:11 Florisil Cleanup: No Instrument ID: ECD1 Acid Cleanup: Yes Sample Amount: 2.00 g-as-rec Sulfur Cleanup: No

Final Ext Vol: 20 mL Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyts		Value	
12674-11-2	Aroclor	1016	1,000	Ü
53469-21-9	Aroclor	1242	1,000	Ü
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	2,400	
11096-82-5	Aroclor	1260	2,000	
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	Ü

# PCB-Aroclor Surrogate Recovery

76.8% Decachlorobiphenyl Tetrachlorometaxylene 90.2%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector. 23
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the 13 given detection limit.
- Found in associated method blank B
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NEF-SP87-010404-K

MATRIX SPIKE

Lab Sample ID: CY17LMS

QC Report No: CY17-Boeing Corporate SHEA

LIMS ID: 01-4982

Project: NBF Joint Material

Matrix: Joint Compound

025083.63

Data Release Authorized: (//

Date Sampled: 04/04/01

Date Received: 04/04/01

Reported: 04/18/01

GPC Cleanup: No

Date analyzed: 04/15/01 19:25

Florisil Cleanup: No

Instrument ID: ECD1

Date extracted: 04/06/01

Acid Cleanup: Yes

Sample Amount: 2.04 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

# Reported in Total ug/kg as received

Cas number	Analyte		Value	
12674-11-2	Aroclor	1016	980	U
53469-21-9	Aroclor	1242		
12672-29-6	Aroclor	1248	980	
11097-69-1	Aroclor	1254	980	U
11096-82-5	Aroclor	1260	980	U
11104-28-2	Aroclor	1221	2,000	Ü
11141-16-5	Aroclor	1232	980	U

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	81.	٥,	2
Tetrachlorometaxylene	82.	. 8	8

- Indicates an estimated value when that result is less than the calculated detection limit.
- W. Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Ü Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank
- Indicates compound was not analyzed.
- Indicates no recovery due to interferences.
- Indicates no value reportable see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NEF-SP87-010404-K

SPIKE DUPLICATE

Lab Sample ID: CY17LMSD

QC Report No: CY17-Boeing Corporate SHEA

LIMS ID: 01-4982

Project: NBF Joint Material

Matrix: Joint Compound

025083.63

Date Sampled: 04/04/01

Data Release Authorized: (,[\*,

Date Received: 04/04/01

Reported: 04/18/01

Date extracted: 04/05/01

GPC Cleanup: No

Date analyzed: 04/15/01 19:58 Instrument ID: ECD1

Final Ext Vol: 20 mL

Florisil Cleanup: No Acid Cleanup: Yes

Sample Amount: 2.02 g-as-rec

Sulfur Cleanup: No

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte			
12674-11-2	Aroclor	1016	990	Ü
53469-21-9	Aroclor	1242	Major 4	PA 150
12672-29-6	Aroclor	1248	990	Ü
11097-69-1	Aroclor	1254	990	Ũ
11096-82-5	Aroclor	1260	990	U
11104-28-2	Aroclor	1221	2,000	Ū
11141-16-5	Aroclor	1232	990	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	106%
Tetrachlorometaxvlene	102%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out.
- Indicates compound was analyzed for, but not detected at the given detection limit.
- Found in associated method blank 3
- Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Sample No: NBF-SP87-010404-K

Lab Sample ID: CY17L

QC Report No: CY17-Boeing Corporate SHEA

LIMS ID: 01-4982

Project: NBF Joint Material

025083.63

Date Received: 04/04/01

Data Release Authorized: ( | f

Matrix: Joint Compound

Reported: 04/18/01

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Date extracted: 04/06/01

CONSTITUENT	Sample Value	SPIKE Found	SPIKE ADDED	reconera \$	RPD
MATRIX SPIKE					
Aroclor 1242 MATRIX SPIKE DUPLICATE	< 1000	6750	9800	68.8%	
Aroclor 1242	< 1000	9380	9900	94.7%	32%

Values Reported in Total ug/kg as received



#### Sample No: Method Blank

Lab Sample ID: CY17MB

QC Report No: CY17-Boeing Corporate SHEA

LIMS ID: 01-4971

Project: NBF Joint Material

Matrix: Joint Compound

025083.63 Date Sampled: NA

Data Release Authorized: (/t

Date Received: NA

Reported: 04/18/01 4/16/

Date extracted: 04/06/01 Date analyzed: 04/14/01 15:11

GPC Cleanup: No Florisil Cleanup: No

Instrument ID: ECD1

Acid Cleanup: Yes

Sample Amount: 2.00 g-as-rec

Sulfur Cleanup: No

Final Ext Vol: 20 mL

Conc/Dilution Factor: 1:1

#### Reported in Total ug/kg as received

CAS Number	Analyte		Value	
12674-11-2	Aroclor	1016	1,000	U
53469-21-9	Aroclor	1242	1,000	U
12672-29-6	Aroclor	1248	1,000	U
11097-69-1	Aroclor	1254	1,000	Ŭ
11096-82-5	Aroclor	1260	1,000	U
11104-28-2	Aroclor	1221	2,000	U
11141-16-5	Aroclor	1232	1,000	Ü

#### PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	93.0%
Tetrachlorometaxylene	100%

- Indicates an estimated value when that result is less than the calculated detection limit.
- Indicates a value above the linear range of the detector. Dilution Required
- Indicates no value reported due to saturation of the detector.
- Indicates the surrogate was diluted out. 0
- Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- Indicates compound was not analyzed. NA
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



Lab Sample ID: CY17

LIMS ID: 01-4971

Matrix: Joint Compound

QC Report No: CY17-Boeing Corporate SHEA

Project: NBF Joint Material

025083.63

Data Release Authorized:(/f

Reported: 04/18/01

LABORATORY CONTROL SAMPLE SPIKE RECOVERY

Date extracted: 04/06/01

SPIKE

SPIZZ

CONSTITUENT

FOUND

ADDED

RECOVERY

LABORATORY CONTROL SAMPLE

Aroclor 1242

9930

10000

99.3%

# Aroclor Surrogate Recoveries

Decachlorobiphenyl Tetrachlorometaxylene 93.5%

102%

Values Reported in Total ug/kg as received